THE ORIENTAL INSTITUTE of THE UNIVERSITY OF CHICAGO
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THE TREASURY OF PERSEPOLIS

AND OTHER DISCOVERIES IN THE HOMELAND OF THE ACHAEMENIANS

By
ERICH F. SCHMIDT

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GUARDIAN MAN-BULLS AT THE GATE OF XERXES, PERSEPOLIS

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Fig. 1.—Map of Iran. Scale, 1:8,000,000

FOREWORD

The late Professor James Henry Breasted, organizer of the Oriental Institute of the University of Chicago, extended in 1931 the scope of its far-flung enterprises in the ancient Near East by including a program in Iran (Fig. 1) for the excavation and partial restoration of the palatial remains at Persepolis, traditional home of the Achaemenian dynasty since Darius the Great.

An American patroness of art who wishes to remain anonymous made it financially possible to initiate the project, which necessarily had to be planned on a broad basis.

Ernst Herzfeld, the renowned student of ancient Iran and Professor of Oriental Archeology at the University of Berlin, fully deserves the credit for his scientific endeavors, which finally brought about the realization of his aspirations in regard to Persepolis. The Oriental Institute received the first concession under the current Iranian antiquities law. Thanks to the co-operation of the German Government, Professor Herzfeld became the Institute's first field director at Persepolis. He began its work there in 1931[1] and continued in charge until the end of 1934.

The High Imperial Government of Iran gave its gracious consent to the program of work submitted by the Oriental Institute and Professor Herzfeld, and it continued its moral support when the activities of the Expedition expanded to other important sites in the vicinity of Persepolis.

Herzfeld, assisted mainly by Fritz Krefter, uncovered on the Persepolis Terrace the magnificent eastern stairway of the Apadana and the stairs of the Tripylon. He excavated the site of the harems of Darius and Xerxes, formerly called the Southeast Building, and restored for the quarters of the Expedition and of a future museum a large part of the Harem of Xerxes. He excavated the Tripylon and the Propylaeum of Xerxes. Soundings on the Apadana resulted in the discovery of gold and silver foundation documents of Darius the Great. Thou-

[1] See James H. Breasted, *The Oriental Institute* (Chicago, 1933) pp. 310–36.

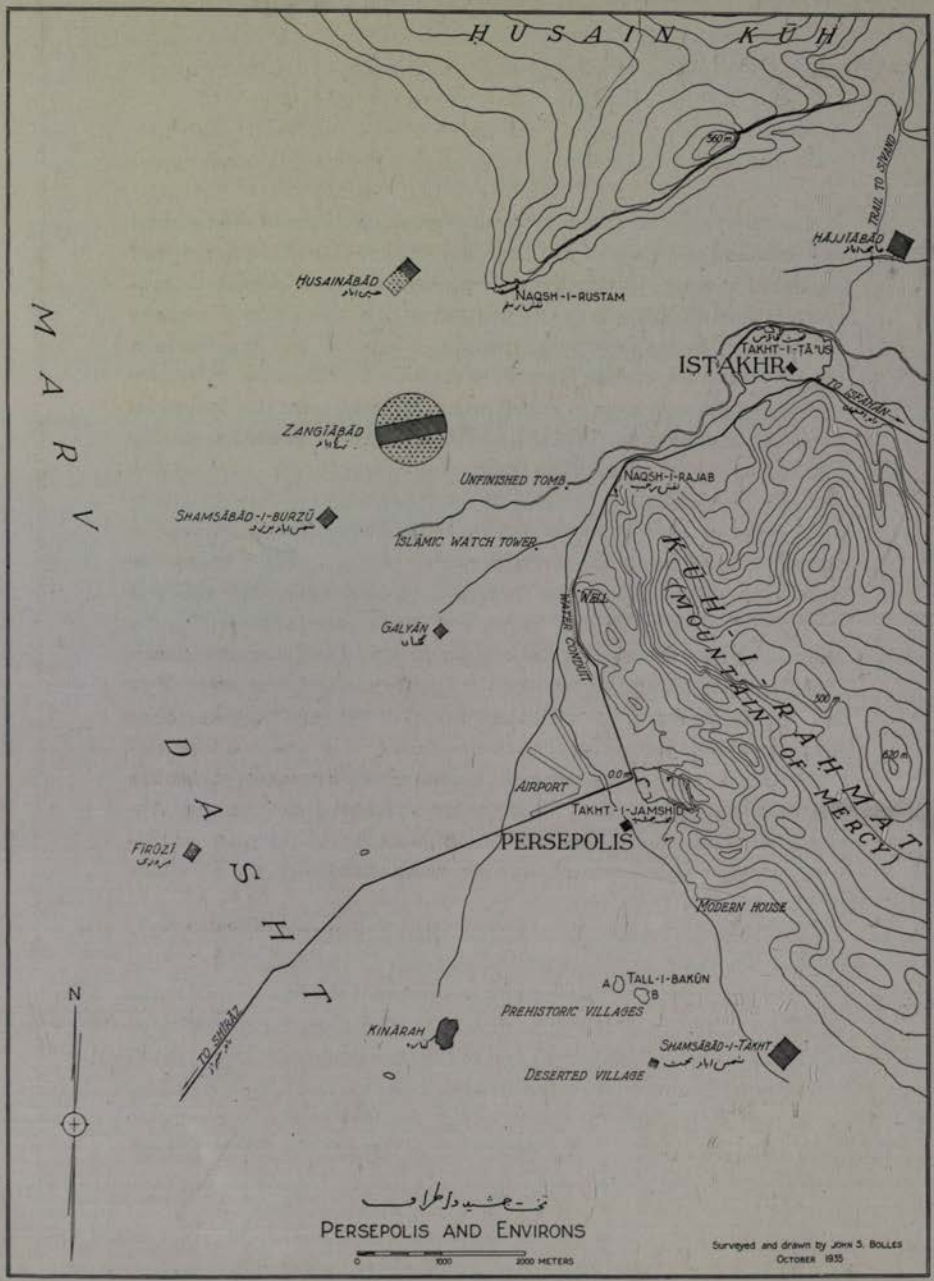

FIG. 2.—Map of the principal sites in the Persepolis area. Scale, 1:80,000

sands of clay tablets with Elamite inscriptions of the Achaemenian period were found in the northeast corner of the Terrace. They are now being studied by the staff of the Oriental Institute. Extensive stretches of the extraordinary system of subterranean drainage tunnels were followed. Moreover Herzfeld carried through excavations in an Achaemenian building south of the Terrace and in post-Alexandrian structures in the plain to the north and northwest. He examined parts of the city mound of Istakhr and, together with A. Langsdorff, excavated a section of a village in a prehistoric mound south of Persepolis. He defined the course of the inclosure in front of the royal tombs at Naqsh-i-Rustam and copied the inscription on the tomb of Darius. Finally, under considerable technical difficulties great numbers of structural fragments of Persepolis buildings were replaced in their original positions. This is an impressive record for the work of four seasons (1931–34).

When Professor Herzfeld left the Expedition, the writer was requested by the Director of the Oriental Institute to take charge of the Persepolis excavations in addition to the Rayy Expedition which he was already conducting. The work at Rayy was sponsored by the Mrs. William Boyce Thompson Foundation of the University Museum in Philadelphia and by the Boston Museum of Fine Arts. When the Rayy Expedition was completed, the two patron institutions agreed to join efforts with the Oriental Institute in order to cope with the spacious area of operations. In addition to Persepolis the sphere of work included Istakhr, the inclosure at Naqsh-i-Rustam, and prehistoric mounds (Fig. 2). Further projects include deposits at the sanctuary of Naqsh-i-Rajab and the direct environs of the Persepolis Terrace.

ERICH F. SCHMIDT

ACKNOWLEDGMENTS

The writer wishes to express his warmest appreciation and gratitude to his collaborators of 1935–37. Without their comrade-like spirit and their ability and devotion to the work it would have been totally impossible for him to direct synchronously the various enterprises under his charge, in addition to pursuing aerial explorations.

In 1935 the Expedition staff included Donald E. McCown, field assistant and subsequently assistant field director;[1] John S. Bolles, architect, and Mrs. Bolles; Eliot F. Noyes, architectural assistant; Karl Bergner, architectural draftsman; Boris Dubensky, photographer of Persepolis and Rayy.

During the season of 1936 the Expedition had to economize. It regretted losing the valuable services of Mr. Bolles. Karl Bergner's work had been completed in 1935, during which year he had been retained for the sake of publications to follow. Bergner's beautifully executed detailed plans of the individual structures of the Terrace were put at the disposition of Professor Herzfeld. McCown and Noyes managed perfectly in spite of increased burdens due to the leaving of these men.

In 1937 R. Carl Haines, an experienced field man and architect, with work in Anatolia and Syria to his credit, replaced Eliot Noyes, who had to return to America for the completion of his studies. The members of the Aeronautical Department are considered in the chapter on Aerial Archeology. The technical staff included two draftsmen for the recording of finds—George Abajan and Sako. Hans Kuehler was the mechanic, electrician, and expert in the difficult removal of heavy stones. Baba Georgis, the Assyrian foreman of the labor crew, joined the Expedition toward the end of the Rayy excavations; he had previously served under the writer at Farah in Iraq and at Tepe Hissar in northeastern Iran. Norair Balassanian, trained in the American College of Tehran, filled the position of camp superintendent.

[1] The writer is indebted to Mr. McCown for reading the manuscript and for valuable suggestions.

The staff regularly includes furthermore a chauffeur, kept busy by constant transport of water in the tank car; a mason, who in addition to maintaining the buildings of the Expedition restores damaged parts of ancient structures; restorers for more delicate stonework and for broken antiquities; and a carpenter with his helpers. There are also garage hands, a gardener, electrician's helpers, guards at the four entrances, night patrols, a cook, and servants.

At the beginning of each season about ten laborers arrive from Damghan, old-time workers from Tepe Hissar, honest peasants and trained for delicate jobs. The Persepolis digging crew fluctuates from two hundred to five hundred men.

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LIST OF ABBREVIATIONS

AJSL *The American Journal of Semitic Languages and Literatures* (Chicago etc., 1884——)

AMI *Archaeologische Mitteilungen aus Iran* (Berlin, 1929——)

FGM George Rawlinson, *The Five Great Monarchies of the Ancient Eastern World* . . . . (3 vols.; New York, 1881)

IF Friedrich Sarre und Ernst Herzfeld, *Iranische Felsreliefs* . . . . (Berlin, 1910)

SAOC Chicago. University. The Oriental Institute, *Studies in Ancient Oriental Civilization* (Chicago, 1931——)

ZDMG Deutsche morgenländische Gesellschaft, *Zeitschrift* . . . . (Leipzig, 1847——)

Fig. 1.—The Terrace of Persepolis. Panorama from the "Mountain of Mercy"

Fig. 8 — The Forum of Pompeii. Panorama from the "Museum of Mirrors"

INTRODUCTION: A VIEW FROM THE "MOUNTAIN OF MERCY"

Between 520 and 515 B.C. Darius the Great chose this spot in the heart of his native land, Persia, now the province of Fars, to build a fortified palace compound and, through its magnificence, to immortalize the glory of the Achaemenian dynasty. We do not know why he changed the dynastic home from Pasargadae, 40 kilometers northeast as the arrow flies, where Cyrus the Great had built his palaces and where his tomb still stands in majestic simplicity. Persepolis is a compact fortress as compared with the loosely scattered buildings of Pasargadae. Perhaps it was the viewpoint of defense which prompted Darius to prefer the spur at the Kuh-i-Rahmat[1] ("Mountain of Mercy").

Many scholars and travelers have seen and described the remains of the palaces of Darius and his successors.[2] Almost twenty-three centuries have passed since in 331 B.C. Alexander the Macedonian made Persepolis the funeral pyre of the Achaemenian dynasty and empire. But still some columns, monumental stairways with magnificent reliefs, and other stone parts of the palaces bear witness to the splendor of monarchs who once ruled the ancient world.

In the rays of the setting sun, when seen from our "sunset pergola" on the slope of the "Mountain of Mercy," the impressive panorama of Persepolis appears like a plastic map (Fig. 3; cf. Figs. 4 and 5). The low hillocks in the lower left corner of the panorama once were towers of the inner defense on the east. On the plan (Fig. 5 *A*) we show one of these towers excavated, also a section of the garrison quarters abutting the fortification. The air view (Fig. 4) restores the course of the wall and also the outer defense system on the crest of the "Mountain of Mercy."

In the panorama (Fig. 3) the royal Treasury (Fig. 5 *B*) with newly

[1] [The author's spellings have, with his permission, been adjusted in most cases to Oriental Institute usage.—EDITOR.]

[2] Bibliography in *IF*, pp. 261–66. See also Herzfeld in *AMI* I (1929–30) 4–16.

discovered reliefs is seen just being excavated. It extends almost as far as the restored Harem of Darius and Xerxes (Fig. 5 *C*), which now serves as quarters for the Expedition. The debris of the Hall of One Hundred Columns (Fig. 5 *N*), started by Xerxes and completed by Artaxerxes I, fills the central foreground. Its eight stone gateways, ornamented with throne scenes on the south and north and with the king's combat with demons on the east and west, and its niches and windows of stone border the vast hall, whose roof was once carried by a hundred columns. The northern portico of this structure, with two more rows of eight columns each and flanked by colossal stone bulls, is also seen in process of excavation. North of the Hundred-Column Hall, near the right lower corner of the view, an unfinished gateway construction (Fig. 5 *M*) remains to be examined to determine its relation to the Hall. The general plan shows that it is situated in an open area, presumably a spacious court or courts.

Between the Hundred-Column Hall and the main entrance to the Harem another crew is at work, uncovering quarters (Fig. 5 *C'*) presumably once occupied by the eunuch guardians of the royal ladies. Beyond and above the monumental Harem portico the laborers are digging in a conical hillock (Fig. 5 *D*) which proved to be entirely composed of stone chips; but, deeply buried below the base of the mound, foundations of a building of Xerxes appeared.

To the right (northward) the so-called "Tripylon" (Fig. 5 *E*) was presumably the first audience hall of Persepolis. It was probably completed long before the more ambitious audience halls, the Apadana built by Darius and Xerxes (cf. below) and the Hundred-Column Hall, displaced it. We may assume that the Tripylon always remained a conference or minor audience hall. Its purpose is suggested by the rows of dignitaries shown ascending on its stairway reliefs. The reliefs on its eastern gate jambs show Xerxes as crown prince standing behind his father's throne—a significant scene which is repeated on newly found reliefs in the Treasury (see p. 21). Herzfeld's excavations identified magnificent man-bulls as capitals of the Tripylon columns.

A small, delightfully sculptured stairway (Fig. 5 *E'*) discovered by Herzfeld (now in the Tehran Museum) leads from the Tripylon southward to the higher platform on which the above mentioned

FIG. 4.—Vertical air view of Persepolis. The defense system and the royal tombs are indicated in white

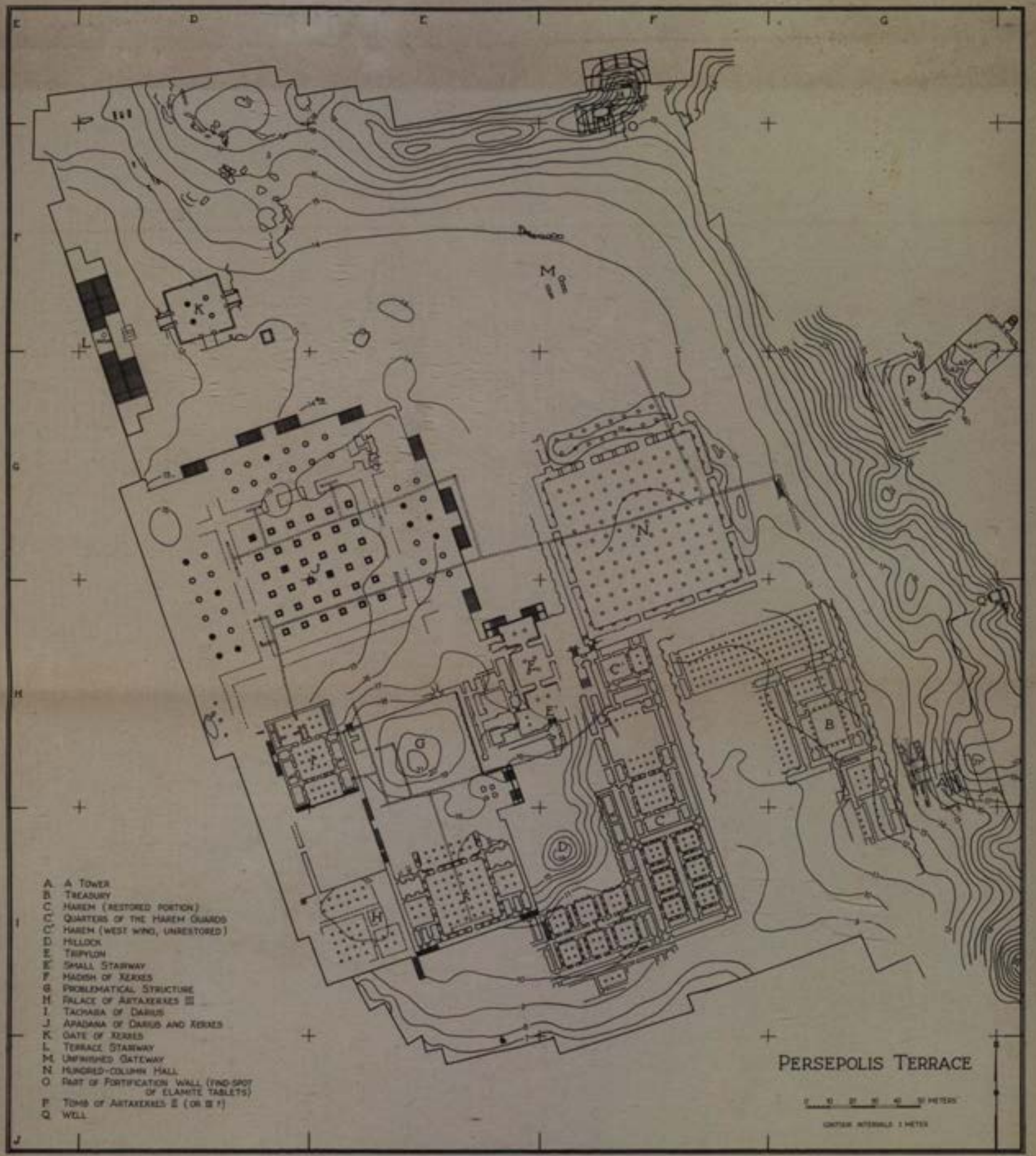


Fig. 5.—Plan of the Terrace of Persepolis, showing structures uncovered by the end of 1937. Surveyed and drawn by John S. Bolles, with additions by Eliot F. Noyes and R. Carl Haines. Scale, 1:2,000

hillock rose. From here another relief-ornamented stairway with an inscription of Xerxes ascends to the level of Xerxes' residence or Hadish (Fig. 5 *F*) and, north of it, the rectangular foundation of a problematical structure (Fig. 5 *G*). It is covered with masses of stone chips. Nothing definite can be said about its purpose prior to further examination. Grooves in the debris mark former diggings.

From the south edge of Xerxes' residence two plain stairways descend to the western, mostly unexcavated section of the Harem complex. In this inconspicuous southwest corner of the Terrace one should expect the kitchens and other domestic quarters whence the tables of the kings and of the occupants of the Harem were supplied.

Beyond the palace of Xerxes Figure 3 shows the site of a badly weathered palace (Fig. 5 *H*) which to judge by its northwest inscription[3] may have been started by Xerxes and finished by Artaxerxes I. The slab bearing this inscription of Artaxerxes I was, however, reused and placed at this spot by Artaxerxes III, who on other inscriptions of the northern terrace face of this palace claims credit for building this "staircase" (Tolman) or "terrace" (Weissbach) or "Vorbau" (W. Eilers, oral information). It is possible, of course, that Artaxerxes III simply extended a structure built by his predecessors, since he does not claim to have built the palace itself. If not, the site of the palace of Xerxes and Artaxerxes I has still to be found.

The courtyard north of the palace of Artaxerxes is bordered on the east by a sculptured stairway with an inscription of Xerxes and on the north by the relief-ornamented southern face and stairways of the Tachara of Darius (Figs. 5 *I* and 6). Some scholars assume that this name signifies "winter palace"; but Susa and Babylon were much more adequate winter capitals, and the King may never have been in Persepolis during the inclement season, when, furthermore, highland blizzards blocked the passes and cut off communication with the western provinces of the Empire. At any rate, the Tachara is a residential palace, built by Darius, whose inscription appears on each of the monolithic niches and windows. Xerxes may have finished it,

[3] For Persepolis inscriptions we have consulted mainly F. H. Weissbach, *Die Keilinschriften der Achämeniden* (Leipzig, 1911), and H. C. Tolman, *Ancient Persian Lexicon* . . . . (New York, 1908) and *Cuneiform Supplement* . . . . (New York, 1910).

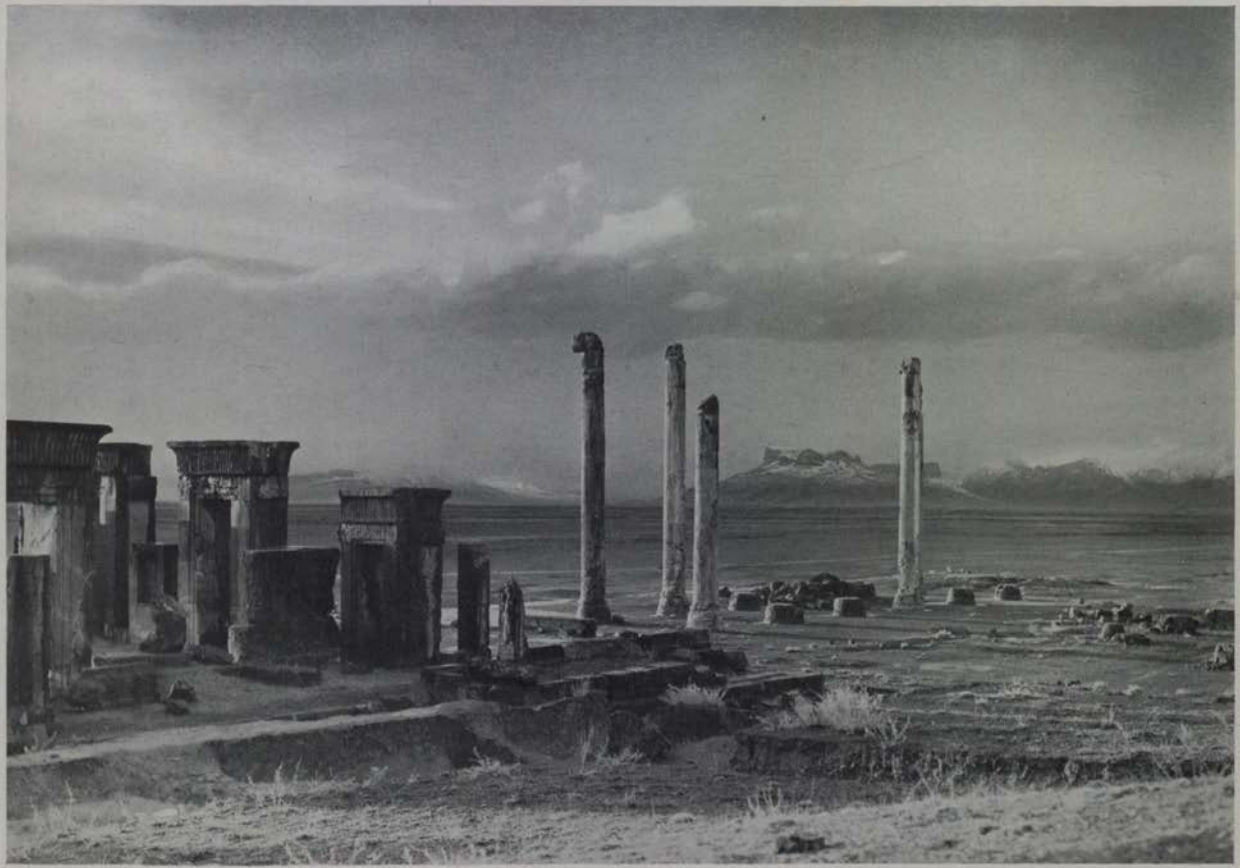


FIG. 6.—Winter storms over Persepolis. Darius' Tachara and columns of the Apadana

as his inscriptions on the flanking pillars of the southern front and on the southern face of the palace platform imply. That Artaxerxes III added the sculptured western stairs is emphasized by him in an inscription.

The most magnificent structure at Persepolis is the Apadana (audience hall) started by Darius I and completed by Xerxes (Fig. 5 *J*). Thirteen of its seventy-two columns still rise above the stupendous platform, which is ascended by two monumental sculptured stairways. The northern one had always been partly exposed. The crew seen at work in Figure 3 is simply cleaning the front of the building to enhance its dignity. The eastern stairway, facing the observer, and the Tripylon stairs to the left were discovered by Herzfeld. The reliefs on this eastern stairway show, in incomparably better condition, the opposite side of the procession depicted on the northern stairway. There are tribute-bearing representatives of twenty-three peoples of the Empire together with Persian, Susian, and Median guards and dignitaries of the court. The discovery of this stairway revealed the greatest monument of Achaemenian art.

To the right (north) of the Apadana the impressive Gate of Xerxes (Fig. 5 *K*) stands above the monumental stairway (Fig. 5 *L*) which ascends from the plain to the royal Terrace. Assyrianized guardian bulls protect the western entrance while a pair of man-bulls guards the eastern (see frontispiece). Xerxes' inscription above the monsters of stone states that he made "this gateway (called) 'All Countries.' "

Figure 5 further shows in the northeast corner of the Terrace a section of the fortification wall (*O*) excavated by Herzfeld. At this point he found thousands of cuneiform tablets, most of them inscribed in the Elamite language of the Achaemenian period.

One of the two royal tombs above the Terrace also appears on the plan (Fig. 5 *P*). It is presumably that of Artaxerxes II, while the tomb attributed to Artaxerxes III is visible, farther to the south, in Figure 4. The latter includes also an unfinished tomb on a spur of the mountain south of Persepolis. It was probably intended for Darius III Codomannus, the last of the Achaemenian monarchs. This aerial view effectively records the two eastern lines of defense, one following the crest of the "Mountain of Mercy," the other, as mentioned above,

extending along its foot. The dotted line of restoration is based on combined air and ground examinations.

The map, finally, indicates the site of a deep rock-hewn well (Fig. 5 *Q*) which now serves to water our little garden at the "sunset pergola." From here the eyes sweep far across the Plain of Marv Dasht, where dark patches mark the present villages and their fields. In Darius' time the scene was probably similar. But at the foot of his palace fortress, to the north, west, and south, there was a settled area where high dignitaries lived in stately buildings and where the commoners had their quarters of mud-brick houses. A few column bases and other hewn stones now mark the sites of the dwellings of the wealthy, while the mud houses have crumbled to gently undulating hillocks mixed with chips of broken pots.

THE DEFENSE SYSTEM OF PERSEPOLIS

Modern historians are puzzled by a reference of Diodorus (after Clitarchus) to the triple fortification system of Persepolis. Is it not possible that the ancient authors refer to three lines of fortifications rather than to three inclosures? Figure 4, the vertical air view of Persepolis and the adjacent Kuh-i-Rahmat ("Mountain of Mercy"), shows a pronounced easternmost line of defense on the very crest of the mountain, east and southeast of the Persepolis Terrace. The towers, now mounds which are also plainly noticeable from the ground, and the connecting curtain walls are clearly marked by light and shadow.

The second line of defense, protecting this tactically weakest side of Persepolis, is indicated on the air view by a row of hillocks paralleling the eastern edge of the Terrace. On the air view the two eastern fortifications are restored in dotted line.

The wall formerly inclosing the remaining three sides of the roughly rectangular Terrace may be considered the third section of the fortification system. For, though no traces are now left at the western and southern edges to show the former wall, it is clear that at least a parapet existed to protect the defenders, otherwise exposed to missiles while standing on the high Terrace edge.[1]

Particularly if seen from the south or southwest, the defense system of Persepolis would have appeared to consist of three lines, since the wall at the eastern Terrace edge was raised considerably above the sky line of most of the buildings and of the wall at the southern Terrace end. At the northern edge the additional defense wall, now a pronounced mound of debris, was presumably as high as the eastern wall; but the base of the latter was higher up on the slope.

THE FORTIFICATION AT THE BASE OF KUH-I-RAHMAT

We mentioned above a row of hillocks along the eastern Terrace edge. Subsequent excavations made in this seemingly inconspicuous

[1] Subsequent excavations defined the inner, northern edge of the southern fortress wall, as thick as the eastern defense.

part of the Terrace became in time remarkably instructive. They proved the correctness of our assumption that the cores of these elevations were the remains of towers. The form of the hillocks did not give any clue as to the plan of the towers. The excavated unit proved to be square, and we postulate the same shape for all others on and above the Terrace.

Bewildering masses of mud-brick debris appeared below the surface crust of the attacked mound in the southeast part of quadrant HG[2] (see Fig. 7). It was due mainly to the digging experience of the old laborers that walls emerged from this chaos. The excavation plan of the first season (Fig. 7) shows, from east to west, the following very instructive sequence, which presumably continued all along the eastern edge of the Terrace: buttress, moat, fortress wall, garrison quarters, and street. Across the street at this point appeared a section of a palatial building subsequently defined as the Treasury of Persepolis.

The main purpose of the buttress was presumably to retain the talus of the mountain, which rises from this point. A batter of mud bricks covered the wall and continued on top of the boulder-built foundation. The top of the latter crops out on the surface to north and south of the excavated section.

Except during the rainy season the moat was dry, simply forming through its depth an additional obstacle for an attacker. However, in addition to being a defensive device against human attack, it also protected the Terrace, and first of all the fortress wall, against the torrents sweeping down the slope of Kuh-i-Rahmat in winter and early spring, and it presumably guided the water to the subterranean drainage system to be mentioned below.

From the moat rises the formidable fortification. Bolles, the head architect of the first season, defined its former height as being more than 11.50 meters on the east and about 15 on the west by measuring the huge blocks of debris found, often inverted, in the moat and in the rooms to the west. The core of the square tower and of at least

[2] See p. 133. The quadrants were designated by letters along both co-ordinates, the "latitude" letter preceding that of the "longitude." The excavation plots into which the quadrants were subdivided were designated in similar fashion by two arabic numbers read in the same order.

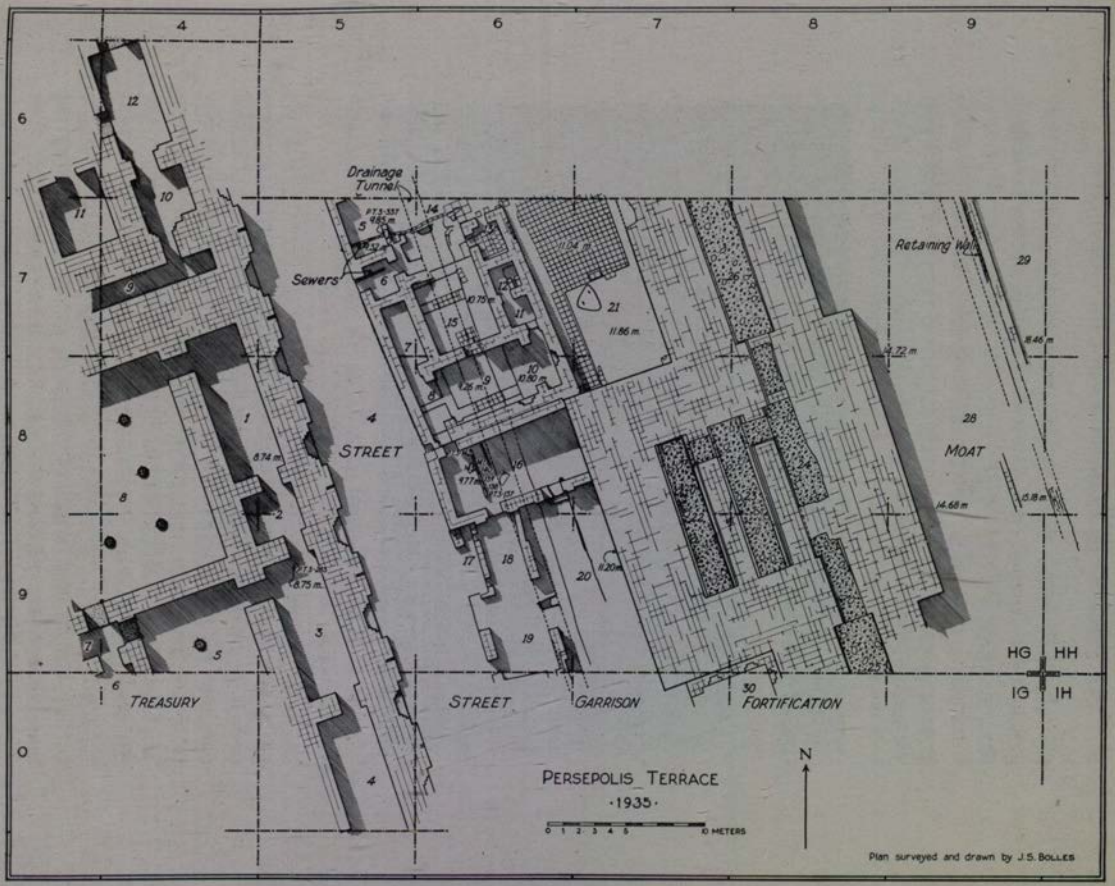


FIG. 7.—Plan of the defense system at the base of the "Mountain of Mercy." Excavations of 1935. Scale, 1:400

the foundation of the curtain walls at either side consists of solidly packed rubble incased in powerful walls of sun-dried bricks (averaging 33×33×12 cm.).

As one would expect, fourth in sequence come the quarters of the Terrace garrison (Fig. 8). The very position of the rooms, which lean against the inner, western face of the fortification, would suggest their

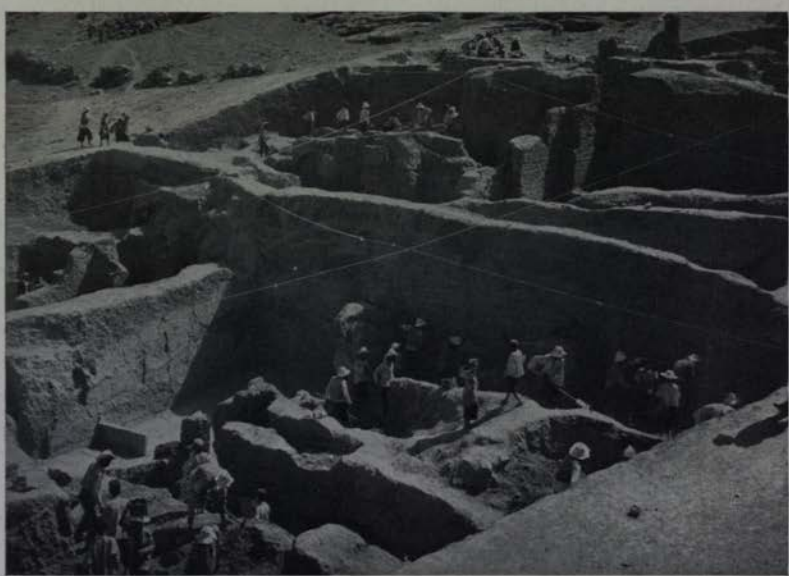


FIG. 8.—Excavating the garrison quarters and the fortress wall at the base of the "Mountain of Mercy."

use as quarters of the guards. In addition, the contents of the rooms proved their purpose. There were hundreds of arrow points of bronze and iron. We found spearheads and sword blades of iron, bridle bits of bronze, and fragments of scale armor in bronze and iron. Such martial equipment is described in connection with the armories of the Treasury (pp. 43–51 and Figs. 27–30).

Besides soldiers' equipment there were domestic objects, such as pottery vessels, large-bellied storage pots, slender jars for water or more potent beverages, canteens, and pitchers with trefoil orifice. The Achaemenian pottery of Persepolis is rather unassuming, purely

utilitarian. We describe some samples below (pp. 85–87 and Figs. 61–62). The royal tableware which we later found in the Treasury was made of stone and also, certainly, of precious metals, though Alexander's soldiers were thorough enough not to leave any vessels of silver or gold.

In this connection we may mention parenthetically that three thousand of Alexander's men could quite easily have been accommodated

FIG. 9.—Foundation documents of Xerxes as found in the garrison quarters

in the fortification system and in the garrison quarters of Persepolis without being endangered by the burning of the palaces.[3] As a matter of fact, they presumably enjoyed the spectacle from the parapets of the fortress walls.

FOUNDATION DOCUMENTS OF XERXES

A totally unexpected discovery was made in Room 16 of the garrison quarters (see Figs. 7 and 9). Here seven beautifully finished limestone slabs appeared, one set inscribed in Old Persian and another in

[3] Cf. Th. Nöldeke, "Persepolis," in his *Aufsätze zur persischen Geschichte* (Leipzig, 1887) p. 143.

Babylonian cuneiform characters. The find conditions were puzzling. These documents had never been used for their intended purpose, namely to be deposited in corners of Xerxes' buildings. In a very profane manner they had apparently been employed as facing of a mud bench, lined up on edge like a row of baked bricks about a meter in front of them.

It would be difficult to believe that these royal documents, in spite of the fact that the text of one is unfinished, could have been used in such slighting fashion during the life of the ruler who had given the order to prepare them for his structures. The character of the inscribed slabs as foundation documents is indicated by Herzfeld's discovery in a corner of Xerxes' Harem of one slab of identical workmanship and dimensions and inscribed with a text identical with that of four of the newly found records. The new series of foundation slabs includes three "Harem texts" in Old Persian and one in Babylonian language and characters. McCown determined that the latter text clearly proved the death of Darius prior to Xerxes' ascension to the throne, though it has been held that Darius abdicated in favor of Xerxes.[4]

The hitherto unknown record of Xerxes is represented on four slabs, one in Babylonian, two (one unfinished) in Old Persian (Fig. 10), and one in Elamite (fragmentary). The stone with the Elamite version had served a different purpose than the rest, but one equally unintended. Its pieces seemed to form part of a doorsill of a late Achaemenian level (in Room 5 of the garrison quarters) which has entirely disappeared. Again, there is a possibility that these slab fragments formed the seat of a mud bench of a lower level. We have to add here that the garrison rooms show several construction levels, starting presumably with the time of Darius.

The new inscription was read and published by Herzfeld.[5] The translation deserves to be given here also in full. The record is of great historical importance for the reign of Xerxes. It gives the subject nations of his empire and thus the time during which the founda-

[4] Herzfeld dealt with the Harem inscription in his *A New Inscription of Xerxes from Persepolis* (*SAOC* No. 5 [1932]).

[5] "Xerxes' Verbot des Daiva-Cultes," *AMI* VIII (1937) 56–77; see also R. G. Kent, "The Daiva-inscription of Xerxes," *Language* XIII (1937) 292–305.

FIG. 10.—A new inscription of Xerxes. The text on foundation slab PT3 143

tion slabs were wrought, between 486 and 480 B.C. It tells of uprisings of nations against the King after he had ascended the throne of Darius, and it shows Xerxes' zeal in suppressing the cult of the Daivas and in spreading the religion of Ahuramazda and his prophet Zoroaster. In addition, the loftiness of Xerxes' language in this document is worthy of his great father's tradition.

A great god is Ahuramazda, who created the earth here, who created the heaven yonder, who created man, who created peace for man, who made Xerxes king, one king of a multitude, one lawgiver of a multitude.[6]

I (am) Xerxes, the great king, the king of kings, the king of the land of many tribes, the king on this wide, far-stretching earth, the son of Darius the king, an Achaemenid, a Persian, son of a Persian, an Aryan, of Aryan lineage.

Speaks Xerxes the king: By the will of Ahuramazda these are the lands outside of Fars over which I was king; I ruled over them; they brought me tribute; what was ordered them by me, that they did; my law held them: Media, Elam, Arachosia, Armenia, Drangiana, Parthia, Aria, Bactria, Sogdia, Chorasmia, Babylonia, Assyria, Sattagydia, Sardis, Egypt, the Ionians that dwell in the sea and those that dwell beyond the sea, the people of Maka, Arabia, Gandara, the Indus land, Cappadocia, the Dahae, the Amyrgian Scythians, the Pointed-capped Scythians, Skudra, the people of Akaufaka, the Puntites, the Carians, the Cushites.

Speaks Xerxes the king: When I became king there were among those lands which are written above (some which) rebelled. Then Ahuramazda helped me. By Ahuramazda's will such lands I defeated, and to their place I restored them. And among those lands were some where previously the Daivas were worshiped. Then by Ahuramazda's will of such temples of the Daivas I sapped the foundations, and I ordained: the Daivas shall not be worshiped. Where the Daivas had been worshiped before, there I worshiped Ahuramazda with Arta the exalted; and whatever else had been done wrongfully, that I righted. This which I did, I did it all by the will of Ahuramazda; Ahuramazda helped me until I had completed the task.

Thou who art of an after age, if thou thinkest, "I wish to be happy in life, and in death I wish to belong to Arta," abide in those laws which Ahuramazda has established and worship Ahuramazda together with Arta the exalted. The man who abides in the laws which Ahuramazda has established and worships Ahuramazda together with Arta the exalted, that one shall be happy in life, and in death he shall belong to Arta.

[6] The paragraphing of the inscription as here given is arbitrary. This English version, which takes into account the translations mentioned in n. 5, is further based on consultation with Dr. George G. Cameron.

Speaks Xerxes the king: May Ahuramazda guard from evil me and my house and this land. This I implore of Ahuramazda; this may Ahuramazda grant me.

"GARRISON STREET" AND DRAINAGE SYSTEM

The soldiers' quarters were strictly separated from the royal buildings on the Terrace. The irregular fronts of their houses border a street averaging 6 meters in breadth and lined on the opposite side by the formerly impressive façade of the royal Treasury with its armories. The "Immortals," who were presumably quartered in these buildings, particularly during the presence of the King at Persepolis, let the floors in their rooms rise at a rather fast rate, as indicated by several superpositions simply paved over or leveled from time to time.

There is, however, one astonishing feature. A magnificent drainage tunnel runs from north to south beneath the soldiers' quarters. It is cut out of the living rock with a breadth of about 1.15 m. and a height ranging from 1.75 to 2.10 and covered with roughly hewn stone slabs. But this canal was not used for general drainage; the street was preferred for that purpose, as indicated by brick sewers emptying on the road. This fact is one more indication that the admirable system of subterranean canals extending underneath the entire Terrace was used not for the removal of sewage but for the collecting of water drainage for storage, perhaps in reservoirs still to be discovered. The drainage tunnel underneath the garrison rooms slopes toward the south, and, since the Terrace edge is not far away, we shall soon be able to determine whether or not the canal expands here into a basin. The outer face of the Terrace does not show any openings large enough to be the exits for tunnels of considerable dimensions. Herzfeld and Krefter cleared several hundred meters of this drainage system without finding reservoirs.

THE TREASURY OF PERSEPOLIS[1]

Late in 331 B.C. Tiridates, the commander of the Persepolis garrison, delivered without resistance the palaces and treasures of his king to Alexander. He had previously refused to admit the more gallant Ariobarzanes, who at the "Persian Gates" had held up Alexander's march toward the heart of the Persian Empire. Ariobarzanes may have died in battle, perhaps on the plain below the walls which he had intended to defend—walls useless in the hands of a traitor.

Some ancient historians claim that a massacre took place in the "town," which Alexander turned over to his soldiers for pillage. The town certainly consisted of scattered buildings only, palatial and more modest ones.[2] The Terrace, as mentioned above, was occupied by three thousand soldiers before Alexander sealed the conquest of Persia by burning the palaces which symbolized the power of the Persian "King on this wide, far-stretching earth."

Arrian states that Alexander burned Persepolis in revenge for the destruction of Athens and its temples and for all the evil the Persians had done to the Greeks,[3] while other historians claim that the burning of the palaces was the result of a drunken revelry of Alexander.

Needless to say, Alexander took care that the treasures of the Persian king were not injured by the conflagration. As a matter of fact, they had been removed before Persepolis, including those parts of the Treasury which contained inflammable material not found

[1] For historical references we have used mainly Nöldeke, *Aufsätze zur persischen Geschichte;* B. Niese, *Geschichte der griechischen und makedonischen Staaten seit der Schlacht bei Chaeronea* I (Gotha, 1893); Ed. Meyer, *Geschichte des Altertums* III (2. Aufl.; Stuttgart und Berlin, 1915); *Cambridge Ancient History* VI (Cambridge, Eng., 1927); Fr. von Spiegel, *Erânische Alterthumskunde* (3 vols.; Leipzig, 1871–78); J. V. Prášek, *Geschichte der Meder und Perser bis zur makedonischen Eroberung* (2 vols.; Gotha, 1906–10); F. Justi, *Geschichte des alten Persiens* (Berlin, 1879); A. Christensen, *Die Iranier* (München, 1933); J. Marquart, *Untersuchungen zur Geschichte von Eran* I (Göttingen, 1896).

[2] Neither air views nor ground examinations show compact town deposits in the vicinity of Persepolis.

[3] *Anabasis* iii. 18.

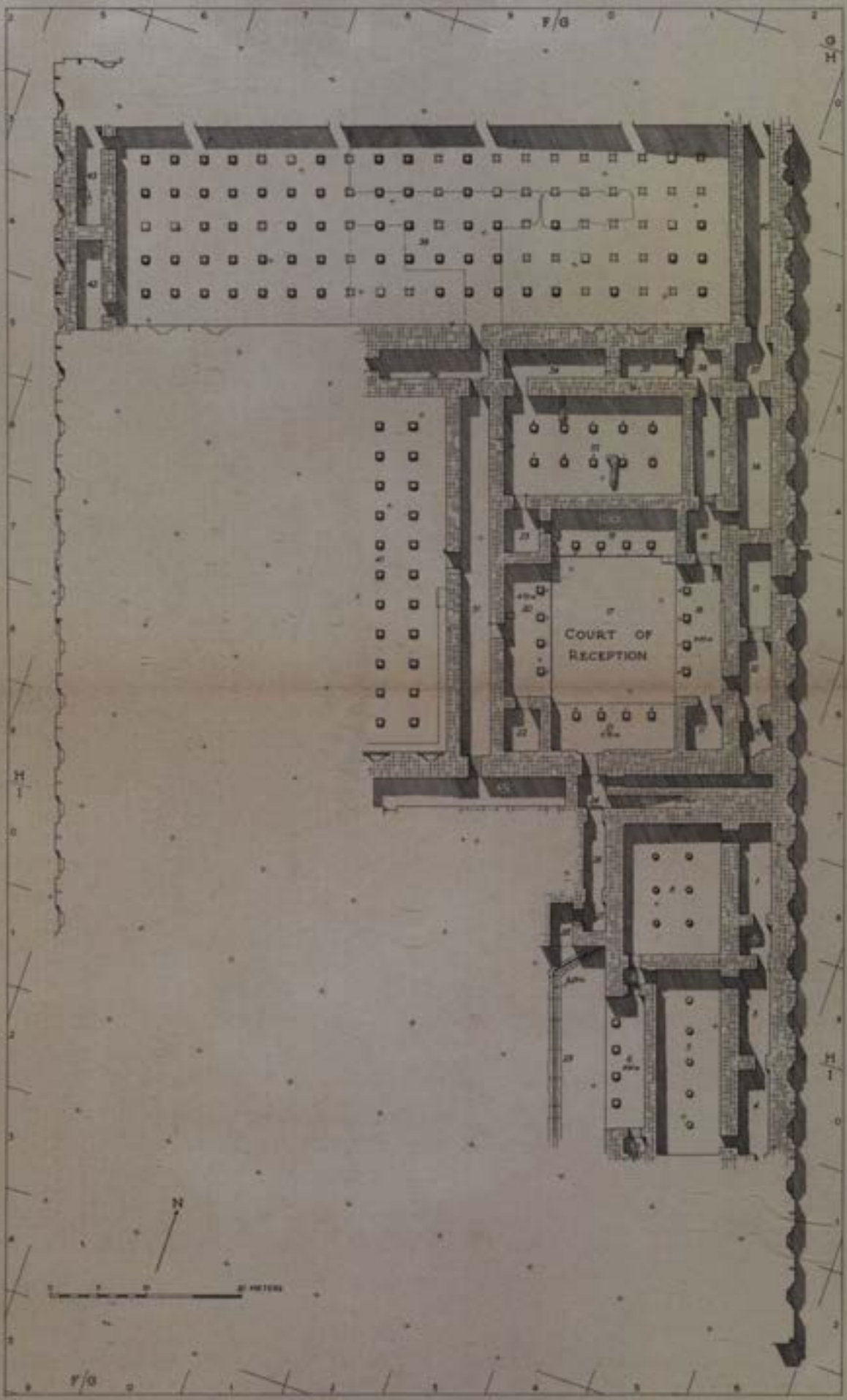


FIG. 11.—Plan of the Treasury. State at end of 1937. Scale, 1:500

worth while to be taken along, went up in smoke. According to Plutarch[4] ten thousand mules and five thousand camels were needed to transport (to Ecbatana) the loot of the Macedonians.

We believe our excavations have dispersed the doubt whether the royal storehouse or Treasury was on the Persepolis Terrace or at some other locality.[5] In the course of two years of work, interrupted by excavations in neighboring sites, we uncovered in the southeastern part of the Persepolis Terrace a block of buildings which are identified by their contents as royal storehouses and armories. The character and value of many finds justify the term "Treasury." Architectural features support the identification.

The rectangular structure (Fig. 11) forms a complex entirely separated by streets from the neighboring buildings, namely the Hundred-Column Hall of Xerxes and Artaxerxes I on the north, the Harem of Darius and Xerxes on the west, and the garrison quarters on the east. There is little doubt that a street borders it on the south also and separates it from the postulated wall or parapet along the southern Terrace edge.

The Treasury was protected by a powerful inclosure, averaging 2.5 meters in thickness and about 11 meters in height, as determined by blocks of wall debris which had fallen into the eastern street. Four-stepped niches alternating with vertical slots break the monotony of the façade in an attractive manner. A grayish green wash covers the outer face of this inclosure as well as all the inner divisions in the complex under consideration.

So far (autumn of 1937) about one-half of the Treasury is uncovered (Fig. 12). Naturally, as will be explained below, it does not consist of storerooms only. Further, the expedition architect, R. Carl Haines, determined three building phases, starting with an original southern series of rooms (Nos. 9, 24, 32, and southward on plan, Fig. 11). The first addition reaches to the south wall of Hall 38, which, together with its subsidiary chambers, concluded the plan of this interesting complex. The main criterion for defining the successive building stages was the presence of walled-up outside niches in the northern faces of the thick walls which border the respective sections. The

[4] *Alexander* 37. [5] Cf. Nöldeke, *op. cit.* p. 143.

FIG. 12.—The Treasury excavations at the end of 1937

reason for the additions was doubtless the need of increased space for storage and administration. In consequence of the changes in the plan, certain routes of circulation were also changed by walling up doors or breaking new openings through existing walls. All supplements and changes took place during the reign of Darius, as shown below.

SOME STRUCTURAL DETAILS

All walls of the Treasury complex are built of sun-dried bricks (32–34 cm. square and 10–13 cm. high). We mentioned above that the wall faces are covered with a grayish green wash applied on plaster. A few doorsills consisted of baked bricks (33×33×7.5 and 33×51×8.5 cm.). The most elaborate sills were made of well polished stone slabs (stippled in Fig. 11). All floors of rooms, as far as preserved, bear on the surface, above plaster and fill, a red wash which we always find in structures of the time of Darius, the founder of Persepolis. The "Darius type" of column base also persists throughout this complex. It is a discoid torus with or without a square-topped plinth underneath. The columns, made of wood, have all disappeared through burning, ancient pilfering, or decomposition. In Hall 41, by measuring curved fragments of painted plaster, the architect found that the diameter of the outer curve corresponded to the diameter of the flat top of the torus and therewith to that of the columns, whose cores in this case had been of wood. To be sure, a hall with ninety-nine columns painted in bright blue, red, and white lozenge patterns would have been somewhat startling; but the measurements are too close to be disregarded (see Fig. 33). Attractive painted frames with rosettes (see Fig. 17) in the color scheme of the column decoration inclosed the doors in the porticoes of the Court of Reception (Fig. 11, Nos. 17–21) and in the suite of rooms Nos. 16, 15, and 36. The roofs apparently consisted of beams carrying smaller branches (or mats?) covered by mud layers. A burned roof beam, squared, measuring 18×24 cm. in cross section, was found in Room 40. There may have been elaborations of the ceilings, though we found no traces in the burned debris of rooms where charring might have preserved fragments.

Although the walls were in part preserved to a considerable height, we did not notice a single window. The restoration of the main hall

of the Harem (see Fig. 3) with openings near the roof may give an idea of the lighting system in the Treasury as well.

At the present state of the excavation we distinguish the following sections or units of the Treasury: the Court of Reception, record rooms, armories, treasure halls, passages, and offices(?).

THE COURT OF RECEPTION (FIG. 11, NOS. 17–21)

The ornamentation of this unit of the Treasury, together with the character of the adjacent sections, marks its focal importance. It is an

FIG. 13.—Work in the Treasury. The southern relief in the Court of Reception is visible at left of center.

open, rectangular courtyard, its surface once covered with coarse white plaster, while the porticoes on each side had the usual red-washed floor. Four wooden columns on stone bases of Darius type lined the edge of each portico and once carried the roof. Floor depressions flanking the western and northeastern exits mark the sites of statuary which has since disappeared. The stone figures may, as at other points on the Terrace, have represented leopards or similar animals lying on their bellies.

The walls of the southern and eastern porticoes are each ornamented by a fine relief (Fig. 13), depicting in each case the same scene but the opposite side of persons and objects. The discovery of these reliefs reveals a hitherto unknown feature of Achaemenian architecture—the decorated orthostat or dado. Once Herzfeld believed that he had found orthostatic reliefs at Pasargadae.[6] He concluded that the orthostatic technique was earlier than the use of reliefs on the doorjambs, windows, and niches of Persepolis. In a later publication[7] he omitted reference to orthostats at Pasargadae. At any rate, our new reliefs, carved in the usual dark gray limestone, with polished surface, form in true orthostat fashion the decoration of two walls. The eastern relief is carved on a monolith, while the southern dado consists of three well fitted sections, the westernmost protruding, presumably as a result of earthquakes.

THE RELIEFS

The description of one relief applies to the other as well. The southern relief (Fig. 14) serves as the basis; variations in the eastern relief will be pointed out.

DARIUS AND XERXES

The scene doubtless depicts a periodically or at least frequently repeated event in the routine of the royal court. The King receives a dignitary of the court. We have no doubt that the ruler is Darius the Great. The relief stands in a structure built and used during Darius' time, as shown by the Darius floors, bases of Darius type, and impressions of his seals found in the court complex. The decisive factor, however, is the presence of a second person of royal rank, the crown prince, standing behind the monarch who is seated on the throne. The crown prince can only be Xerxes, who so emphatically states on some of his inscriptions that his father chose him as his successor in preference to his brothers.

Xerxes stands on the platform which supports the throne and raises royalty above the level of the other persons. Darius and Xerxes each hold with the left hand the same symbol, a lotus blossom with two buds. Each wears the same tall headdress, the cidaris. Both are

[6] *IF*, p. 184. [7] *AMI* I 4–16.

FIG. 14.—The relief of Darius in the southern part of the Court of Reception. Scale, 1:32

shown at an exaggerated scale. The beard of each is long, with squared-off tip, distinct from the pointed beards of the other persons on the relief.

Darius' face is not a portrait. It shows the same stereotyped profile as that given to the other persons, a large eye, pronounced eyebrows, a gently curved nose, and a well modeled mouth with a moustache bent down and curled at the tips. The imposing beard, waved and curled, reaches to the chest. The hairdress is arranged in a wealth of curls, combed up above the forehead to the rim of the tall cidaris. The candys or outer garment flows in folds to the ankles, while the feet are incased in plain, heeled shoes. The sleeve of an undergarment or tunic shows at the right wrist.[8]

The King holds a plain scepter-like staff with globular head in his strong but clumsily modeled hand. References to Xerxes' scepter in Esther 4:11 and 5:2 suggest that this staff was covered with sheet gold; pure gold would have been too heavy. The apparent modeling of the staff is due to ancient mutilation. Darius' face and the globular scepter head also have been injured, certainly by the Macedonians, since the faces of the other persons were not touched. The relief was consequently below ground at the time of the Arab invasion.

Darius wears no objects of personal adornment or formal attire, neither necklace nor bracelets nor earrings. There are no depressions in the stone beside the cidaris, as on other reliefs of Persepolis, indicating the former presence of a sheet of precious metal covering the headdress. The gold-sheathed scepter, its head perhaps of precious stone, and the lotus flower, if artificial, are the only visible objects of precious materials.

The King's throne has certain elaborations suggestive of woodwork but was probably, in part at least, sheathed with precious metal. According to ancient sources the throne was made of pure gold with feet of silver; but we believe with Rawlinson[9] that its core consisted of wood. The feet, with lions' paws as the most attractive elements, may actually have consisted of solid metal. The King's feet are on a footrest whose supports are in the form of bulls' legs.

Xerxes, the heir to the throne, stands behind Darius and extends

[8] For details of royal dress cf. *FGM* III 202 ff.

[9] *FGM* III 207.

his right hand toward the throne, not quite touching the top of its back. The position of the arms and the draping of the garment—as a matter of fact the entire upper part of the body—of the King and of the crown prince are schematized almost to identity. The distinguishing features are Xerxes' standing position and his empty hand, not yet holding the scepter of his father. The position of Xerxes' arm is identical with that assumed in the royal gesture of adoration on the tombs of the kings.

THE INCENSE BURNERS

Two incense burners appear in front of Darius. According to a very plausible explanation by Herzfeld, these receptacles actually stood at either side in front of the throne.[10] If we follow Herzfeld's suggestion further, Xerxes too might be standing beside his father, with the two courtiers beside Xerxes or, more probably, at the opposite side of Darius but on the lower level. On the other hand, Xerxes may actually be standing behind his father on the dais, flanked by the two courtiers, one at either side.

The workmanship of the incense burners indicates that the originals were of metal, presumably silver or gold. On a tall, slender, corrugated stand with a fluted semiglobular head rises the terraced conoid container for the incense, spreading its perfumed smoke through arrow-shaped perforations. The receptacle is fed through the truncated apex, which is closed by an anvil-shaped stopper attached by a chain to a duck's head at the top of the basal part. It may have been frankincense, imported from Arabia,[11] that was burned before the throne of the King.

THE PERSON RECEIVING AUDIENCE

In front of the throne stands the high dignitary whose audience with the King was evidently the purpose of the scene perpetuated in stone. That he is a Mede is shown by his headdress, identified as Median through an inscription on Darius' tomb at Naqsh-i-Rustam. The staff which he holds in his left hand indicates his rank at court. As a rule, for instance in the tribute procession of the Apadana, the usher or introducer in each scene is shown with such a staff. The right hand of the Mede is raised to his mouth in a gesture of respectful speech. The eastern relief shows the sword at his right side.

[10] *IF*, p. 143. [11] *FGM* III 212.

The very fact that this scene was considered worthy to be immortalized in stone signifies that it represents an important and frequently occurring function of the court. We do not believe that it pictures an introduction or the like. Formal receptions were presumably held in the Tripylon, the Darius-Xerxes reliefs of which were completed during the same years as the reliefs under consideration (cf. pp. 32 f.).

The Treasury reliefs seem to picture the reporting of a high dignitary to his king. J. Marquart[12] mentions the functions of the *hazarapat* or Chiliarch, the commander of the King's bodyguard, that is, the first thousand of the ten thousand Immortals, but at the same time commander-in-chief of the entire body of select warriors. The statement referring directly to our problem explains that the Chiliarch directly supervised the relations of all persons with the court and that he apparently gave daily report to the king. The position of the Court of Reception near the Treasury archives (cf. p. 33) has bearing on this point. F. Justi identifies with the Chiliarch a personage of exactly the same appearance as ours who is shown receiving audience on the very similar northern reliefs of the Hundred-Column Hall.[13]

If the identification of the reporting dignitary with the *hazarapat* or Chiliarch is correct for our new reliefs as well, we may go one step further and tentatively identify the southern rooms of the Treasury, as far as excavated, with the offices of the commander of the royal guards. In this respect we may direct the attention of the reader to the fact that there is only one gate in the east wall and that it connects the Treasury and the postulated offices of the commander with the quarters of the garrison, giving access to the soldiers on duty in the Treasury.

To find a Mede in such a trusted position at the Persian court is not surprising. There was a Mede, Takhmaspada, in command of a Persian and Median army at the very beginning of Darius' reign.[14]

[12] *Untersuchungen zur Geschichte von Eran* I (Göttingen, 1896) 224 [56] ff.

[13] "Der Chiliarch des Dareios," *ZDMG* L (1896) 659–64. The writer is obliged to Dr. J. Junge for directing his attention to this article. Cf. also on the Chiliarch Justi, *Geschichte des alten Persiens*, p. 43, and Ed. Meyer, *Geschichte des Altertums* III (2. Aufl.; Stuttgart und Berlin, 1915) 35.

[14] Great inscription of Behistun; see Weissbach, *Die Keilinschriften der Achämeniden*, pp. 40 f.

An alternative for the identification of the reporting court official is given by the character of the building under consideration. He may be the Treasurer, who was certainly a trusted and important person. As a matter of fact, the Persian title of this official is mentioned in Aramaic inscriptions found on objects of green stone in the Treasury (cf. p. 62), as determined by Dr. Wilhelm Eilers. This same Persian title, in the form *gan-za-bar-ra* ("treasure-bearer"), has been discovered by Dr. George G. Cameron in Elamite texts from the same area. In this case the new reliefs and the northern doorjambs of the Hundred-Column Hall might represent two distinct persons.

TWO DIGNITARIES

Behind Xerxes (or, presumably, beside the royal persons) stand two high court officials. One of them, the Carrier of the Royal Battle-Ax and Bow, is easily identified as such. However, who is the exalted dignitary who takes precedence over the carrier of the royal weapons? The sole attribute of his office is a cloth which he carries, neatly folded, in his right hand. Is it a towel, a napkin, a handkerchief, or the blue band with white dots, the royal diadem?[15] Eduard Meyer states that the official called the "Eye of the King" is still more prominent than the Chiliarch. To the Eye of the King the ruler has intrusted the control of the Empire and the supervision of its officialdom.[16] His place, Meyer continues, is at the side of the ruler, in battle as at court.

J. Marquart states that the office of Cupbearer, like that of *hazarapat*, was of particular importance, since to both these officials the safety of the King was intrusted.[17] Marquart further indicates that the office of Cupbearer was, at least in later Achaemenian times, in the hands of eunuchs. If so, this fact would be important for our problem, since the lack of moustache and beard (which would be visible above the muffler) suggests that the person depicted was a eunuch.

On the northern portals of the Hundred-Column Hall, where a similar scene is shown, the corresponding official holds, in addition to the cloth, a fly-whisk above the head of the King, in this case Xerxes or Artaxerxes I. This official appears also as the sole attendant of the King, with the same attributes, on the southern portals of this build-

[15] See *FGM* III 205.

[16] Meyer, *op. cit.* p. 43.

[17] Marquart, *op. cit.* p. 229 [61].

ing, and he is shown on many other reliefs of the Persepolis palaces. In Xerxes' Hadish the "towel-bearer" may be the Lord Chamberlain, to judge by the scent bottle which he carries in his other hand. Again, as in the case of the person receiving audience, who, though pictured alike in the Treasury and in the Hundred-Column Hall, may possibly represent quite different officials, the dignitary pictured with a cloth on the new relief and those on other reliefs who hold the fly-whisk, with or without the scent bottle in addition, may be distinct officials of the court. For the time being the identification of the dignitary on the new relief with the Cupbearer seems to us the most plausible.

This attendant of the king is dressed in the candys worn by royalty and the other Persians alike, while his headdress has the form of a *bashlik* or muffler cap. His shoes are identical with those of the Persians at either end of the relief. They have three straps, also buttons, on the instep, while the footgear of royalty is plain.

Behind the assumed "Cupbearer" stands the Carrier of the Royal Battle-Ax and Bow. His counterpart on the tomb of Darius is called "Aspačina (Aspathines), the Carrier of the Battle-Ax (Mace?), King Darius' . . . . ."[18] He is a Mede, as shown by his headdress, by his trousers and coat, and by his shoes, strapped in the same manner as those of the assumed *hazarapat* or Treasurer. The difference in Persian and Median shoes we noticed also on the Apadana reliefs and elsewhere. Furthermore, on the Treasury relief both Medes wear earrings in distinction to the Persians. The left hand of the carrier of the royal weapons holds the strap, with a triangular metal guard, of the royal bow case hanging on his left shoulder. We definitely assume that the bow case is that of the king. If it were the Mede's own case he would wear it at his side in the usual manner, shown on other reliefs. On the eastern relief (see Fig. 16) the top of the bow case is preserved, ending in the head of a bird, perhaps a parrot. The right hand holds the battle-ax of the King. Were it not for a rather efficient bronze specimen of this type, found north of the Hundred-Column Hall (Fig. 30 and p. 49), we would consider it a symbol rather than a practical weapon. Its head is double-edged, one blade protruding from the wide-open beak of a bird, while the opposite end is anvil-

[18] Cf. *IF*, p. 16.

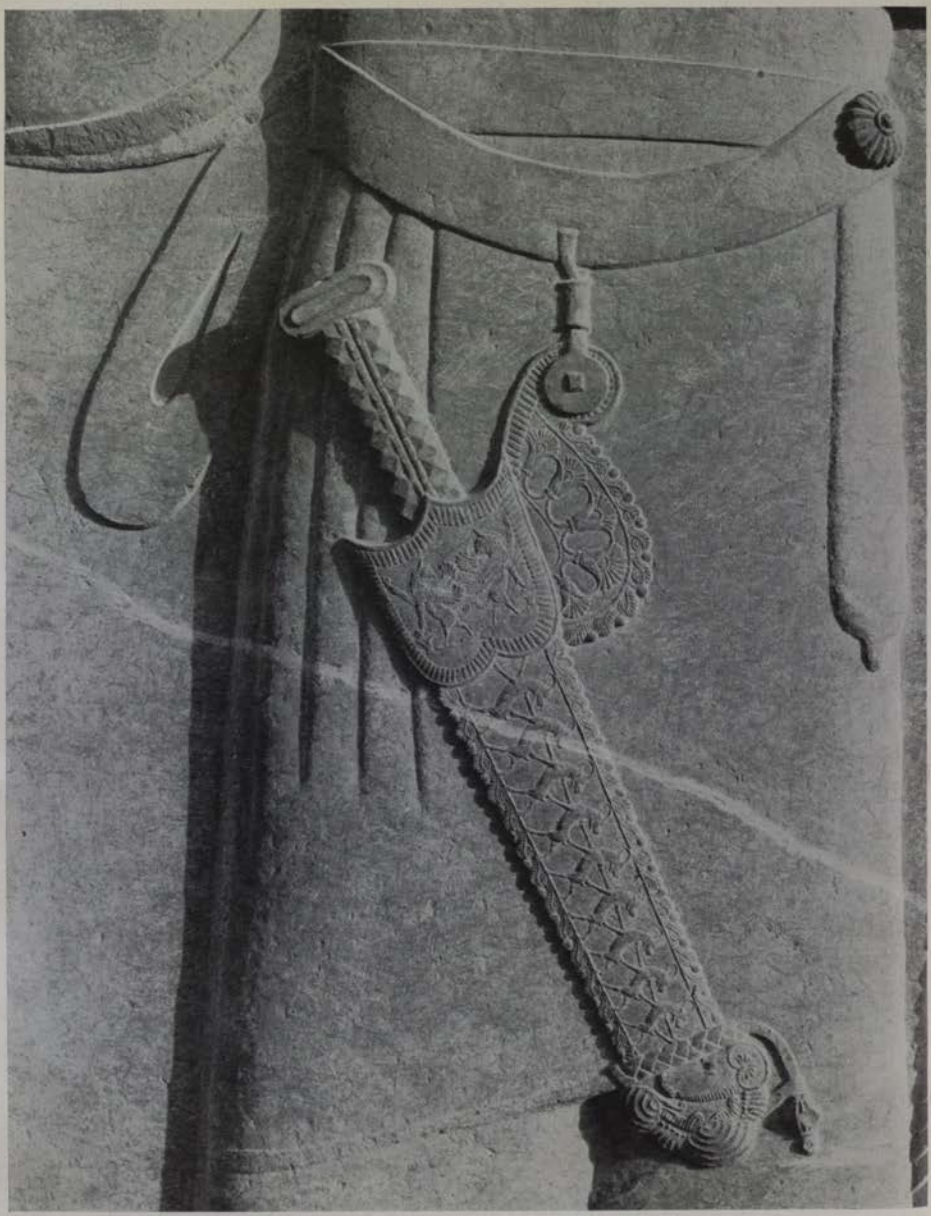


FIG. 15.—The sword of the Carrier of the Royal Battle-Ax and Bow in the southern relief of Darius. Scale, 1:3

shaped with a bifurcate projection. Besides the battle-ax head of Figure 30 we illustrate also a bronze guard of a bow case strap (Fig. 27 *i*) such as here shown. The supposably wooden handle of the battle-ax on the relief is roughened by triangular incisions at the grip end.

Attached to the sagging belt of this Median carrier of the royal weapons is his sword in its magnificent scabbard (Fig. 15), the most exquisite detail of the entire relief. Lotus blossoms decorate the flap. On the scabbard top two griffons, back to back, with hawk faces turned, stare at each other across their opened wings. The body and the forepaws are those of a lion while the hind legs end in powerful claws. One of the forepaws touches a lotus blossom standing in front of each griffon. Nine male ibexes, decreasing in size toward the converging end, prance on the scabbard shaft, the border of which, like that of the flap, is elaborately decorated. The scabbard tip bears a finely wrought bull's head. His conventionalized horn forms a heart-shaped figure filled with a nine-petaled blossom. A vaguely drawn and highly conventionalized lion fills the lower half of the tip—once again the omnipresent symbol of the lion and bull combat. A braided leather strap encircles the shaft end. In order to hold the sword in position the strap extends around the right knee and is attached again above its tasseled end. The hilt of the sword has an oval head, and the grip is roughened by square and triangular facets and by grooves.

FOUR ATTENDANTS

Our first draft of this section was headed "Guards and Attendant." We took it for certain that the two persons at the left end and one of those at the right were lance-carrying guards. However, when examining the fragments of the broken eastern relief we found that the two "lances" of the pair at its right end terminated in a rectangular process extending from the top of the baldachin (Fig. 16). Consulting the better preserved of the two northern portals of the Hundred-Column Hall, we found that the lance of the person identified by Herzfeld as Gobryas, when he still assumed that the Hundred-Column Hall was built by Darius,[19] also ends without point, in the same process of the baldachin. We see three possibilities: The points of the lances are hidden behind the baldachin flap; they are unfinished;

[19] *IF*, p. 143.

or they are not lances but poles to support the baldachin flap. In the case of the person beside the pail-carrier we found proof that the shaft he holds is that of a lance. Among the objects gathered by Herzfeld and preserved in the Persepolis museum is a relief showing the right side of the top of a baldachin, identical with that once taken from the Treasury relief; and beside the lion frieze is the point of a lance. The facts that each of the shafts held by the two persons to the left in the southern relief ends in a globe[20] and that the globes rest on their feet in the same manner as the lances and spears of all other Persepolis

FIG. 16.—The eastern relief in the Court of Reception

guards suggest that these poles are the shafts of lances, their points hidden behind the baldachin. In spite of this we cannot disregard the fact that the poles on our relief as well as on the portal of the Hundred-Column Hall end in a rectangular process, suggesting either a flap of the canopy or a problematical device held by the two men.

All those who on this relief are shown in close presence of majesty are persons of high rank. It is possible therefore that "Gobryas the Patishorian, Lance-Bearer of King Darius,"[21] or, if dead, his successor, is represented by the lance-bearer at the right end of the southern relief. Yet one would have expected some further attribute, distinguishing him from the persons at the opposite end of the scene.

There remains the pail-carrier. On the above mentioned relief in the Hadish of Xerxes two attendants are shown, one carrying scent

[20] Presumably of gold; cf. Herodotus vii. 41.

[21] Prominent on Darius' tomb; see *IF*, pp. 15 f.

bottle and cloth, the other a portable incense burner and a pail identical with the receptacle here shown. We conclude therefore that the latter contains the powder (frankincense?) to feed the incense burners in front of the throne. The handle and the workmanship of the receptacle, identical with that of the burner bases, show that it is made of metal. Here too we may assume that it is made of gold or silver. The dress of this attendant, a Persian, is identical with that of the lance-bearer beside him and of the attendants or guards at the opposite end.

BALDACHIN AND BORDER

The relief under consideration was presumably the model for the upper part of the reliefs of Xerxes or Artaxerxes I on the northern portals of the Hundred-Column Hall. Hence, the embroidered baldachin spread above the throne on the reliefs of the latter building should illustrate the canopy on the Treasury relief also, though here the tassels only are preserved. On the reliefs of the Hundred-Column Hall rows of confronted bulls on an upper panel and of lions below are shown at either side of the central Ahuramazda symbols. The omnipresent twelve-petaled rosettes decorate the frame, while a fringe of network with tassels forms the lower border. The pole supports may have been of gold.[22]

A frame partially filled with twelve-petaled rosettes incloses the Treasury reliefs, as far as preserved. To judge by the portal reliefs of the Hall of One Hundred Columns, this frame inclosed the entire scene. A groove cut across the headdresses of Darius and Xerxes in the southern relief shows the attempt of some later persons to chisel off the top of the slab, presumably at a time when the level of the groove was approximately flush with the surface of the ground.

ANALOGIES AND CHRONOLOGY

The reliefs on the portals of the Hundred-Column Hall show all persons of major importance who appear on the Treasury reliefs, with the exception of Xerxes, the crown prince. Now seated on the throne of his father is Xerxes or his successor, Artaxerxes I. The latter completed this building, according to a foundation document inscribed

[22] Cf. *FGM* III 216.

in Babylonian and deposited in the southeast corner of the outer wall (see p. 92).

However, the scene on the front gateways of the Hundred-Column Hall pictures a grand function of state, with display of the royal guards, and not a frequently repeated event of court routine, as we regard the scene immortalized in the Treasury. On the former reliefs the *hazarapat* or an usher initiates the state function, which the king attends resplendent in a diadem of gold, a golden necklace, and bracelets of gold. The indications for the ornaments mentioned are given by holes and cuts in the stone at either side of the parts of the body concerned, in the same manner as with other representations of the king at Persepolis.[23] In the Treasury Darius wears none of these objects of royal and presumably formal adornment.

There is another pair of reliefs bearing relation to the Treasury scene. They are on opposite jambs of a portal of the Tripylon, situated between the area of the grand audience halls and the Terrace section reserved for the private quarters of the rulers. Unaccompanied by any dignitaries or attendants, Darius, seated on his throne, and Xerxes, his chosen successor, standing behind him are here pictured on the eastern gateway.

For chronological correlation the occurrence of Darius and Xerxes on the Treasury reliefs and on the Tripylon is highly important. The two series of reliefs are contemporaneous or almost so. According to Herodotus vii. 1–3, after the news of the Battle of Marathon (491 or 490 B.C.) had reached Darius he gathered a formidable army to punish Athens and, after the revolt of Egypt, the latter country as well. During these preparations his sons started to quarrel about the accession to their father's throne, for they held that, according to Persian law, the heir to the throne should be determined before the army marched. Darius chose Xerxes, his first son born after his accession to the throne, in preference to three sons born prior to that event. Herodotus implies that this choice was mainly due to the all-powerful influence of Atossa, daughter of Cyrus II, who had been the wife of her brother Cambyses before she became the wife of the great Darius and the mother of Xerxes.

[23] The usher or *hazarapat* has no necklace, contrary to Herzfeld's assumption in *IF*, p. 143.

Darius died in the autumn of 486 B.C. or, according to some authorities, in 485. Thus we are probably right in dating the reliefs in the Treasury and on the Tripylon portal between 491/490 and 486/485 B.C. Herodotus vii. 4 may even limit their date to one year, for he states that death came upon Darius "in the year after the revolt of Egypt," presumably the same year in which he had declared Xerxes his successor. We do not believe that Darius would have been represented together with a crown prince before Xerxes was officially designated as such, nor do we believe that Xerxes would have had himself immortalized as crown prince after he took his father's scepter.

RECORD ROOMS

Our term "Court of Reception" is based primarily on the reception scene on the reliefs, which suggests that the king actually received there the assumed report of the dignitary represented. We could also have called it "Court of Records," for records may have been compiled there to be stored in the near-by archives.

Records made on perishable material have disappeared. The totally burned Room 11 (see Fig. 11) at the southeast corner of the Court of Reception may have contained such documents. Fifteen clay labels ("bullae"), each impressed with one or more seals, some bearing the name of Darius, others that of Xerxes, were here found. Many rags of charred cloth once possibly inscribed, or the remains of valued fabrics, also occurred in that small chamber.

Together with Room 11, three other symmetrically arranged corner chambers (Nos. 22, 23, and 16) give the courtyard with its porticoes a cruciform plan. A cylinder seal and a clay label, found in the southwestern chamber (Room 22), are flimsy evidence for calling it a "recorder's office"; but it may have served some such purpose. Room 16 in the northeast was sterile, as was the group of rooms north of it (Nos. 15, 36, and 35), although this suite, as far as Room 36, excels in mural decoration. Doorways in this area are ornamented with painted frames with rosettes, like all the doorways in the Court of Reception and its porticoes (Fig. 17). Room 23, perhaps another recorder's office, is the antechamber to Room 33, the Treasury archives (Fig. 18).

Out of 730 cuneiform tablets and fragments of such, found to date

in the entire Treasury complex, 653 tablets and fragments occurred in Room 33 alone (see Fig. 19). We are certainly justified in calling it the

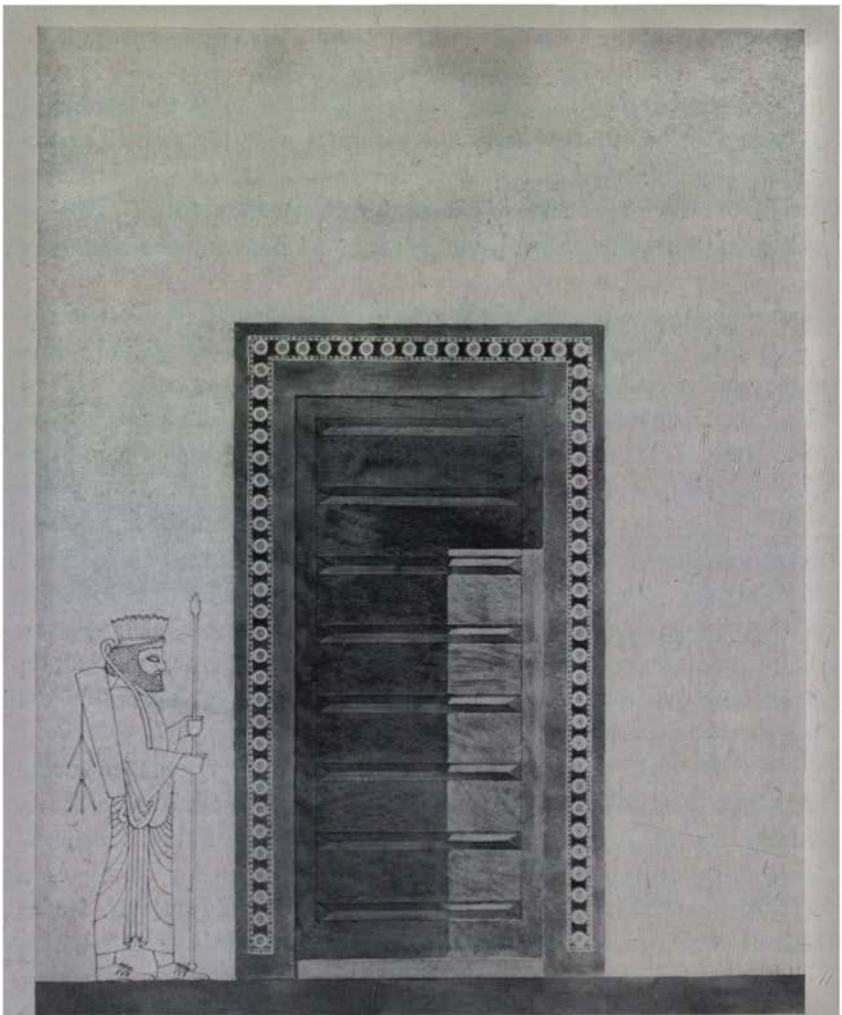


FIG. 17.—Restoration by E. F. Noyes of a doorway such as existed in the Court of Reception. Scale, 1:40.

archives of the Treasury. Some records were also stored in other sections of the building. In Hall 38, for instance, four tablets and forty

FIG. 18.—Excavating the archives of the Treasury. Patches of plaster burned during the violent conflagration hang on the walls.

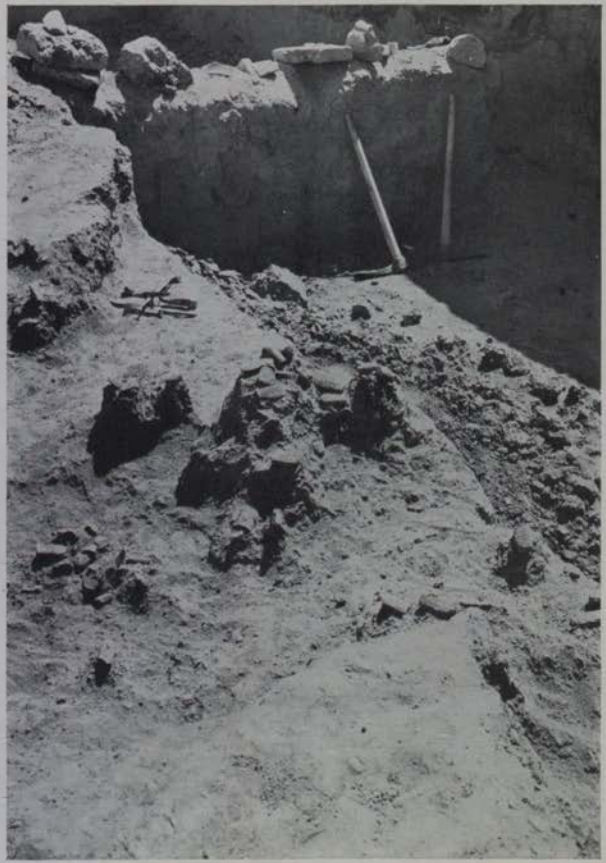
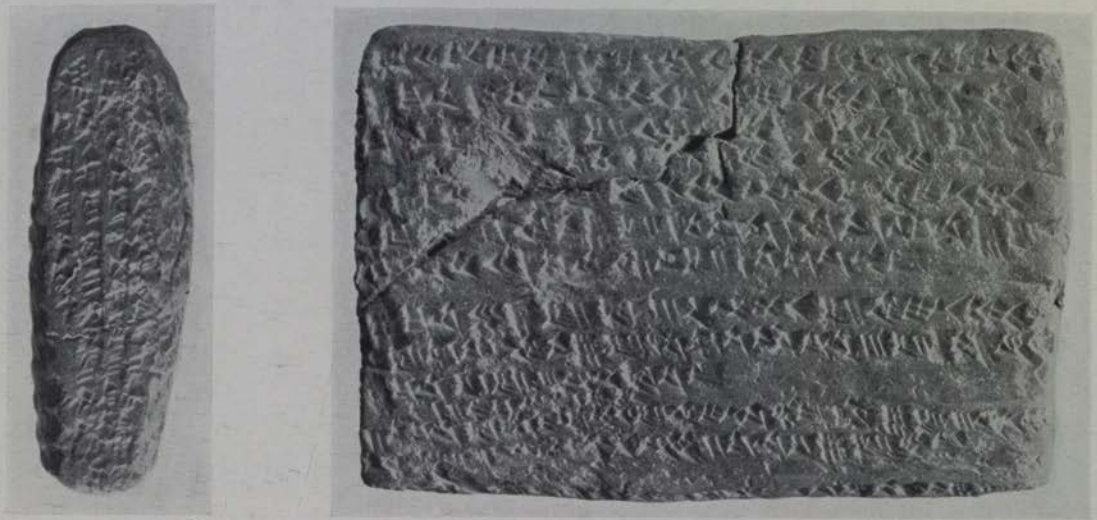


FIG. 19.—Achaemenian tablets with Elamite inscriptions in the burned debris of the archives of the Treasury.

PT4 332



PT4 808

FIG. 20.—Clay tablets, one (PT4 808) with Babylonian inscription, the other with Elamite inscription and seal impression. Actual size

fragments of such, together with fifteen clay labels, lay in the floor refuse. In the archives, destroyed by a violent conflagration, sixty-seven seal-impressed clay tags also occurred. Weapons too had here been stored.

Nearly all cuneiform tablets of the Treasury bear records in the Elamite script and language of the Achaemenian period. We illustrate two samples of such documents (Fig. 20). The common form is elliptical, cut off at one end to accommodate the seal impression. A perforation for attachment at times contains remains of cords. Only a few tablets and fragments of a larger, rectangular type were found. The rectangular tablet PT4 808 is inscribed in Babylonian and is dated, according to Dr. George G. Cameron, "in the twentieth year of Darius." Certain seal impressions bear the name of Darius or of Xerxes. We should obtain valuable information from this inscriptional material, once it is studied by the staff of the Oriental Institute in Chicago.

SEALS AND SEAL IMPRESSIONS FROM THE TREASURY

Fortunately, both the archives (Room 33) and "Record Chamber" 11 were destroyed by a violent fire, which baked all tablets and clay labels once here deposited. Otherwise many specimens might have been dissolved by moisture or injured by tools. We shall deal first with the types of seals so far distinguished and then with the much greater material of seal impressions.

Our collection from the Treasury and some specimens from the garrison quarters show that stamp seals and cylinder seals were used synchronously. While labels often bear impressions of both cylinders and stamp seals on the same specimen, the tablets found in the Treasury are in each case marked with the impression of a cylinder seal only.

The stamp seals, made of various stones, including lapis lazuli, and of baked clay, are usually truncated cones; but pyramidal, discoid, and scaraboid forms occur. There is also an effigy seal of chalcedony carved in the shape of a calf (Fig. 21). The cylinder seals are usually of stone, including assorted chalcedonies; but specimens of baked clay and bone also were found.

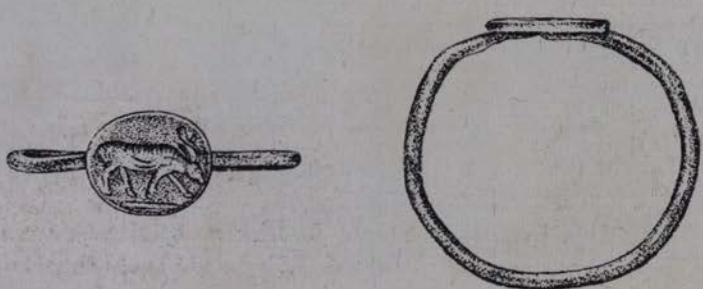
Finger rings of gold or bronze also have to be included in this

series. We may consider as signet rings those which bear a design incised on the always elliptical top (Fig. 22).

The seal impressions show a great variety of patterns. Only a few can here be shown. There are first of all the royal seals. Darius and Xerxes are the only kings mentioned. In nearly every case the ruler

PT5 1

FIG. 21.—Effigy seal of stone. Actual size



PT3 60

FIG. 22.—Signet ring of gold. Scale, 2:1

is shown in combat with ferocious animals or with demoniac monsters (Fig. 23). Xerxes' name occurs also with a scene showing two Persians stabbing intertwined lions and with one representing a Mede with Greek captives.

Further seal patterns (Fig. 24) show combats between warriors (PT4 655), also chariot scenes and combats between persons or genii and animals or composite monsters (PT4 704). Two confronted horned sphinxes are shown on label PT4 451. Man-bulls and winged

PT4 726

PT4 652

PT4 650

PT4 801

FIG. 23.—Seal impressions of Darius (upper row) and Xerxes (lower row) on tablets with Elamite inscriptions. Scale, 2:1

PT4 655 2:1

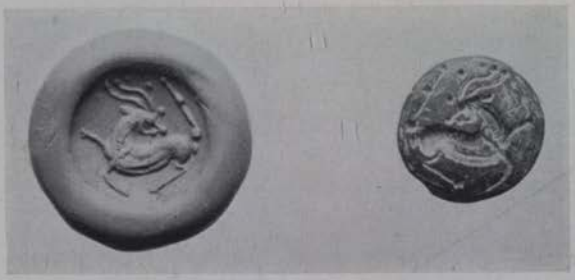
PT4 451 2:1

PT4 704 1:1

Fig. 24.—Seal impressions on a clay tablet (at top) and on clay labels

PT4 509

PT4 950



PT3 218

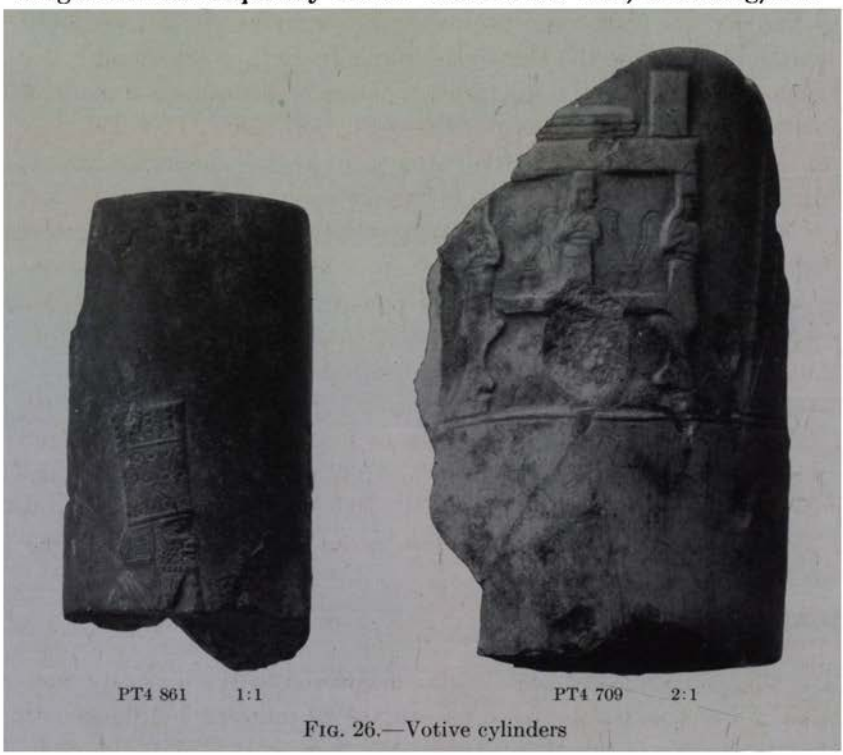
PT4 554

PT4 774

PT3 111

FIG. 25.—Seals and seal impressions. Actual size

lions are illustrated on the seals of Darius and Xerxes. Stamp seal impressions (Fig. 25) picture single persons such as a Greek warrior (PT4 509) of Greco-Persian seal type. There are scenes of persons hunting animals or of lions hunting deer. A winged man-bull with spear (on cylinder seal PT3 111) is shown with a rampant ibex. Single animals frequently occur. There is the ibex, crouching, run-



PT4 861 1:1 PT4 709 2:1

FIG. 26.—Votive cylinders

ning, or rampant. The bull is pictured straight-backed or humped. There are birds, dog, lizard, peacock, lion, boar, horse, and intertwined gazelles. A gazelle is shown on stamp seal PT3 218.

Patterns pertaining to religion include deities, such as illustrated by PT4 554, a lapis lazuli seal the pattern of which resembles in workmanship that shown by Neo-Babylonian impression PT4 774, on which a priest or adorant appears before an altar bearing the symbols of Marduk and Nabu. Further designs of this category include the encircled Ahuramazda, scenes at fire altars, and adorations.

One of the most attractive seal designs shows a trireme (Fig. 24, PT4 704), with its banks of oars in action and its warriors ready for battle. A vicious ram projects from the bow. The sail is reefed. Fish symbolize rather than indicate the water, while a palm tree with fruit marks the shore.

Representations of Bes, the grotesque satyr-like Egyptian god of music and the dance and ultimately of war, seem to have enjoyed particular favor at the Persepolis court. In Hall 38 we found a Bes head of alabaster and a fragmentary image of the same god made of attractive lapis lazuli blue paste (see Fig. 48). Label PT4 950 (Fig. 25) bears several impressions of a Bes seal. At the sides of the crouching god, pictured with tail and horns, are a cock and a jackal or dog.

At this point we may also mention the so-called Babylonian "votive cylinders." Many plain lapis lazuli specimens were found in various parts of the Treasury; but quite a few are inscribed in Babylonian, and some are carved with scenes of religious significance. We illustrate two fragments (Fig. 26), both found in Room 33. Cylinder PT4 861, made of grayish blue lapis lazuli, shows the head of a god or ruler with elaborate tall headdress. Four lines of Babylonian are inscribed on this object (cf. p. 64). A throne or altar fragment appears on the other cylinder, PT4 709, made of gray calcareous stone. The supports are modeled in the form of three tall-hatted persons, while the throne or altar legs end in bulls' feet.

ARMORIES

Only four rooms of those so far uncovered in the Treasury compound were used principally for storage of military equipment. In the burned Room 34 (cf. plan, Fig. 11), connected with the archives (Room 33), but separated from Room 35 by the walling-up of a former doorway, about one thousand arrowheads of bronze were found. More significant yet and proving neat storage of weapons, hundreds of javelin heads and arrowheads of iron occurred in solid bundles, attached to one another through oxidation and sticking in the remains of their charred shafts. Room 39 also was used for storage of weapons, since hundreds of arrowheads of bronze and iron occurred in its burned debris.

It is possible that during the sacking of the Treasury stacks of

weapons were dragged from the armory rooms into the adjacent sections. This may have happened in the case of the archives (Room 33), where about five hundred arrowheads occurred, in addition to spearheads of iron. It is also interesting to note that in this room two gold-plated armor scales were found (cf. below). Room 43 also contained many weapon heads and may be considered an armory room, since no other telltale finds occurred. In Hall 38 and in the partly uncovered Hall 41 several hundred arrowheads were found. Many armor scales of iron also appeared in the debris of the former hall. However, as we shall see below, these halls were not primarily storage places for weapons.

Room 40 was used for the storage of military equipment and for tools. Though it contained not a single arrowhead, its purpose is defined by the occurrence of five bridle bits, a sword, a spearhead, and three strange devices which we can only identify as halberds. In addition, many bronze pulley wheels on iron rods were here found.

WEAPONS AND OTHER MILITARY EQUIPMENT

The soldiers' equipment may be described in connection with the armories. As a whole, the reliefs of Persepolis show much more attractive weapons than the actual remains of martial equipment found in the soldiers' quarters and in the armories. Even so, our finds supply interesting supplementary information. For instance, not a single suit of armor is shown on the reliefs. Armor was apparently not worn on peace duty or on parade. However, when describing Xerxes' army, Herodotus vii. 61 mentions the Persian and Median armor "with iron scales like those of fish." The same historian states (i. 135) that the Persians wore the "Egyptian cuirass" in war. In Figure 27 *b–c* we illustrate samples of these armor scales of iron. In some instances clusters of scales were found, showing the manner of attachment of the units to one another and of the armor to the cloth lining, which of course had disintegrated except for some charred fragments and for faint traces in the oxide. The large scales remind one of G. Rawlinson's reference to horse armor.[24] Armor scales of bronze are exceedingly rare; even rarer are units of gold-plated iron (Fig. 27 *e*). Armor of gold or, as corrected by our finds, of iron covered with sheet gold, was

[24] *FGM* III 178.

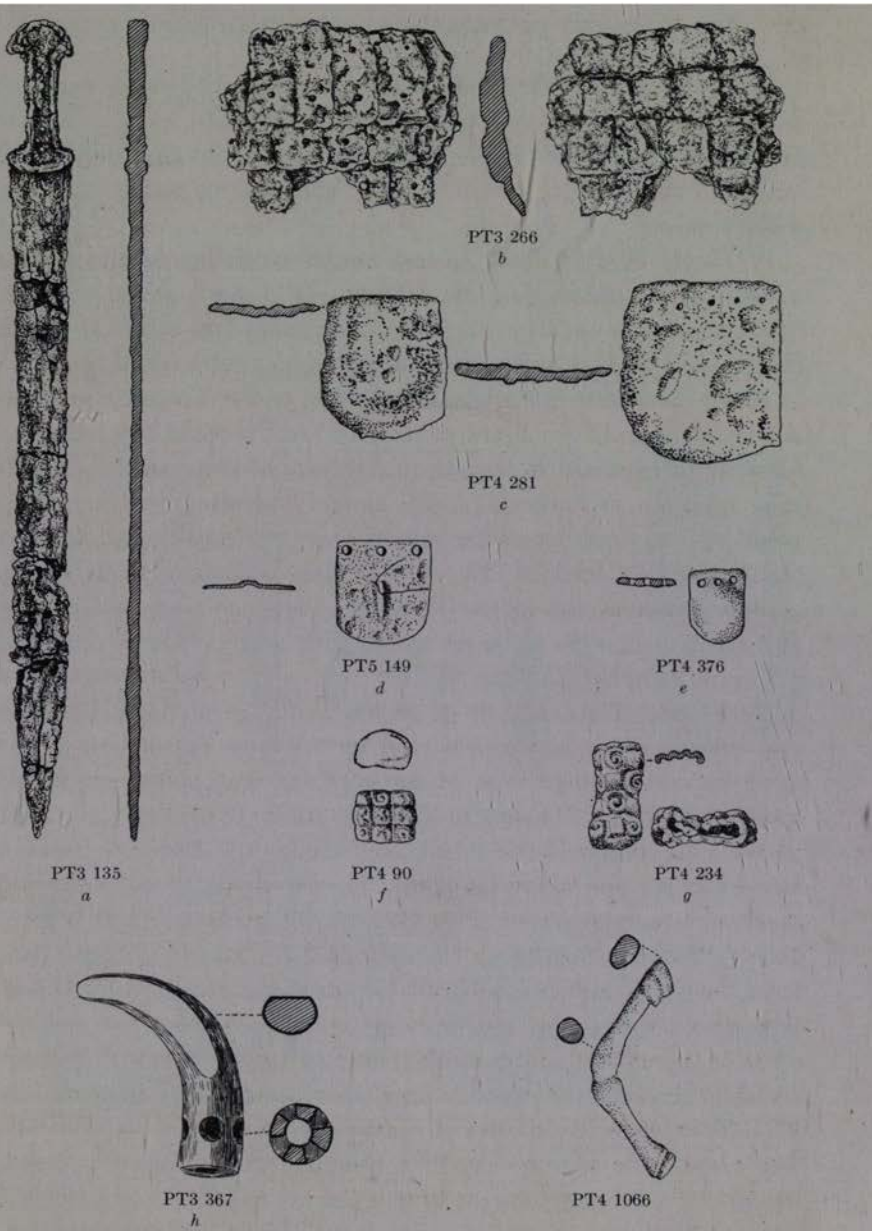


FIG. 27.—An iron sword (*a*) from the garrison quarters; armor scales of iron (*b–c*), of bronze (*d*), and of gold-plated iron (*e*); strap buckles of bronze (*f–g*); a horn-shaped bridle ornament of stone (*h*); and a strap guard of bronze (*i*). Sword, 1:8; other objects, 1:2.

worn by the highest officers of the Persian army. Herodotus describes how Masistius, "next to Mardonius most esteemed by the Persians and the king," perished in the Battle of Plataea. At first the Athenians could not kill him, for below his purple tunic he wore a cuirass of golden scales.[25]

In Figure 27 *a* we show an iron sword which lay on the floor of a room in the quarters of the garrison. It is much longer (86 cm.) than the swords worn by the Persepolis guards and courtiers on the reliefs; but blades of such shorter weapons also were found.

When describing the newly found relief of the Treasury we mentioned on page 27 the guard of the strap of the royal bow case. An identical strap guard in bronze, in the form of two joined ibexes'(?) legs, is shown in Figure 27 *i*. We assume, however, that the strap guard of the royal bow case was of more precious metal. Quite a number of belt buckles (Fig. 27 *f–g*) were scattered about in the garrison quarters and in the Treasury. They are always of bronze, and all of them seem to be decorated with a checkerboard design of alternating scrolls and plain squares.

Thousands of arrowheads of bronze and (less numerous) of iron had been rejected and left behind by Alexander's soldiers in the armories and in the houses of the garrison. The points are rather stereotyped, and a few samples (Fig. 28) suffice to illustrate all major variants. It is somewhat difficult to determine the difference between an arrowhead and a javelin point. The frequent three-flanged and socketed bronze heads (e.g. PT4 1122) are all arrow points, as is probably the variant with three barbs (PT3 278). But the oblanceolate form, found in both bronze (PT4 568) and iron (e.g. PT3 428), may belong to a weapon intermediate in size between the arrow and the spear or lance; that is, it may be the tip of a light javelin. The same is true for two other iron points here illustrated (PT3 96 and certainly PT3 159) and for the cluster of neatly stored iron points (PT4 994). The arrowheads of iron (e.g. PT4 435 and 721) are always tanged, while with rare exceptions the bronze tips are socketed. As a rule the iron points are lanceolate and not tri-flanged; PT4 721 is an exception.

Heads of spears or lances are shown in Figure 29. The three-

[25] Herodotus ix. 24 and 22.

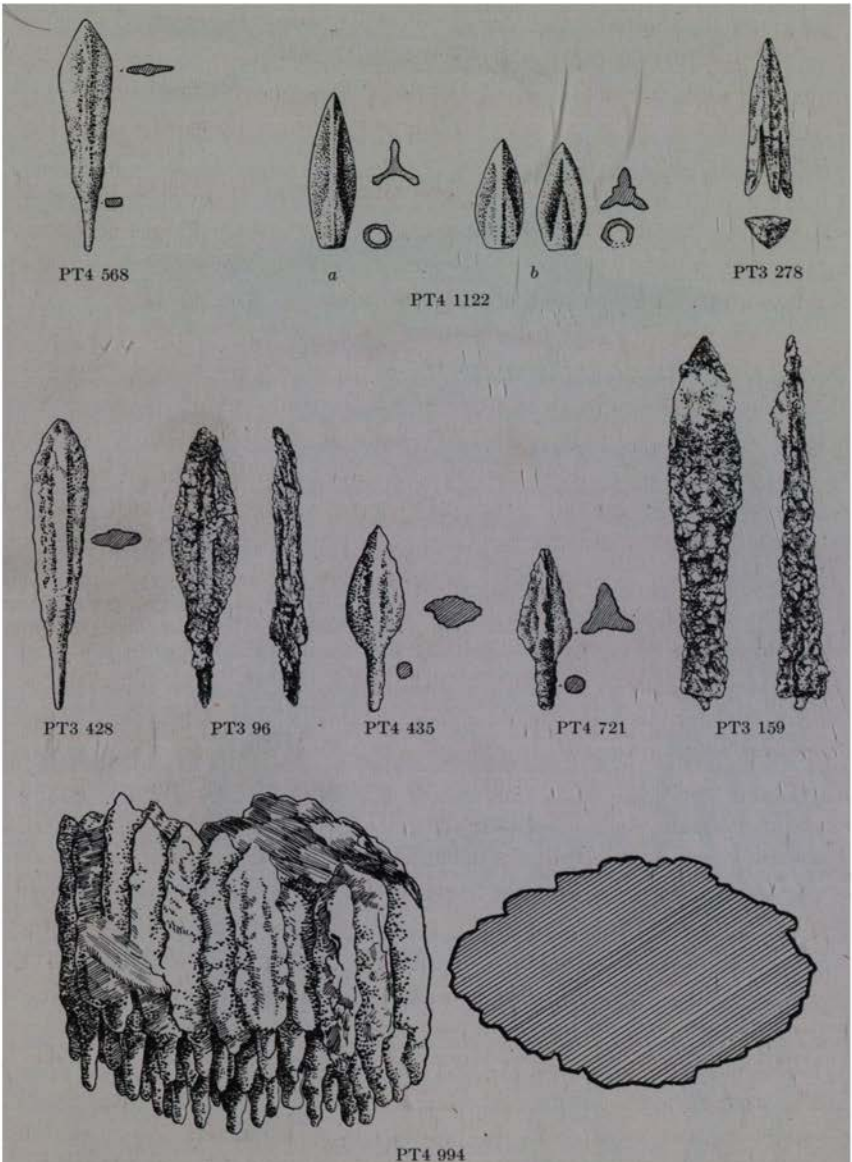


FIG. 28.—Arrowheads of bronze (upper row), arrow- and javelin heads of iron (center row), and cluster of iron arrowheads once stored in an armory room of the Treasury. Scale, 1:2.

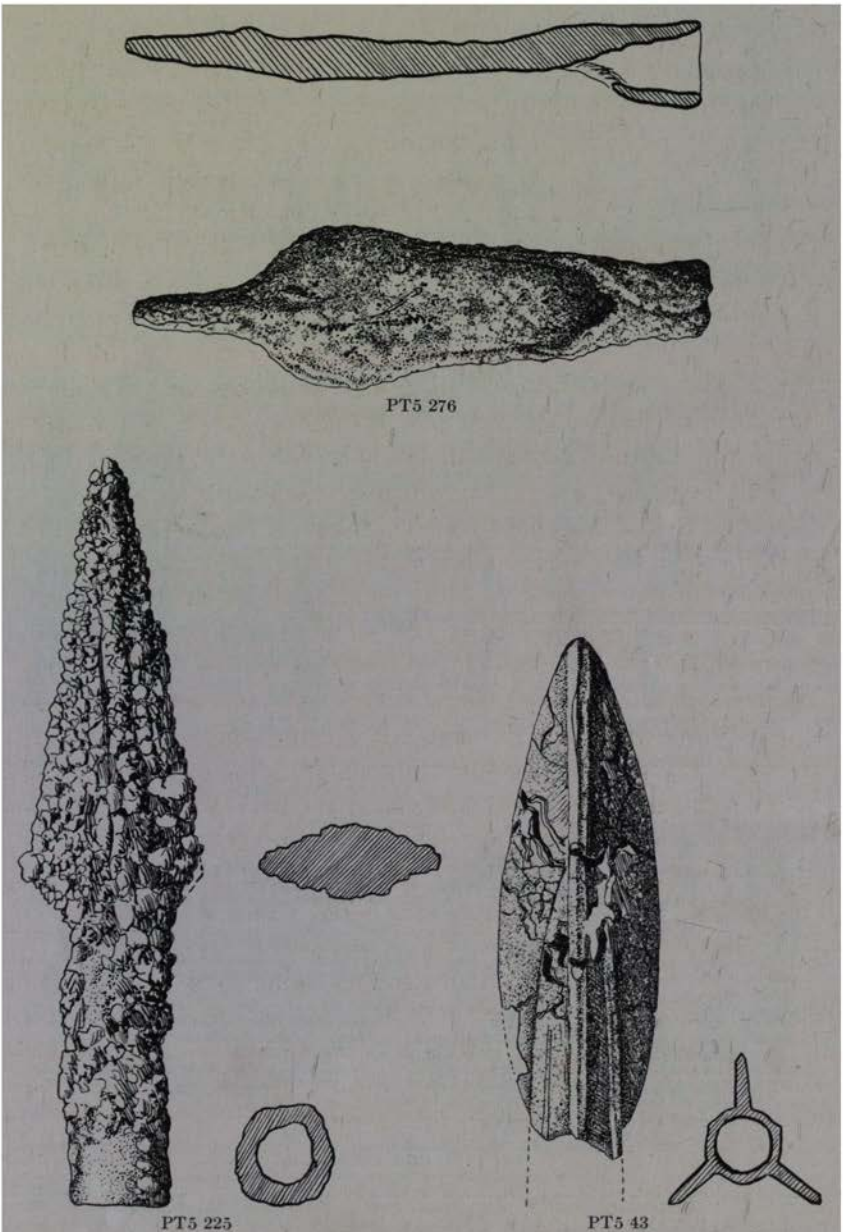


FIG. 29.—Halberd and lance head of iron and lance head or spearhead of bronze. Halberd, 1:6; other objects, 1:2.

flanged bronze point PT5 43 is in form like a greatly enlarged arrowhead, while in the case of PT5 225 the straight edges of the blade give the iron point a distinctive shape which is identical with that of the heads of the spears or lances carried by the guards on the Persepolis reliefs. Both types of points have a socket in which the weapon shaft is inserted—a fact evidenced by the reliefs also.

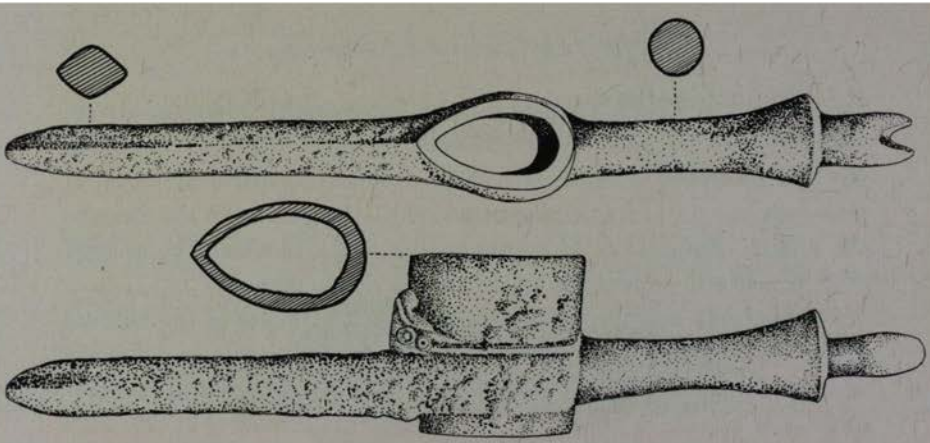
No historian and no relief give reference to the use of the halberd in the Persian army. Perhaps it was employed as a purely defensive weapon on the battlements of a fortress. It is a heavy and cumbersome iron object, as shown by the sample illustrated (Fig. 29, PT5 276), which measures 45 cm. in length. The socket for the shaft is formed by two flanges bent together. A spike projects from the semicircular top and speaks against the use of this object as a digging tool. It would have bent, while it was adequate for a thrusting weapon.[25a]

The battle-ax of bronze illustrated in Figure 30 is unique among our finds. It lay in the debris of the northern portico of the Hundred-Column Hall. A comparison of the royal battle-ax on the Treasury relief (Fig. 14) with this weapon will show their close resemblance. It is possible, however, that the royal weapon was made of precious metal and therefore not efficient for practical use, while the bronze ax would have been quite adequate for piercing a helmet or the like. One blade of this ax has the same bifurcation as the royal weapon on the relief. The opposite blade shows an attractive variant. Instead of a duck's head with protruding "tongue," as carved on the relief, the ax under consideration has a spike projecting from the top of a ram's head modeled on the face of the oval socket. One has the impression of a unicorn attacking, its horn thrust forward.

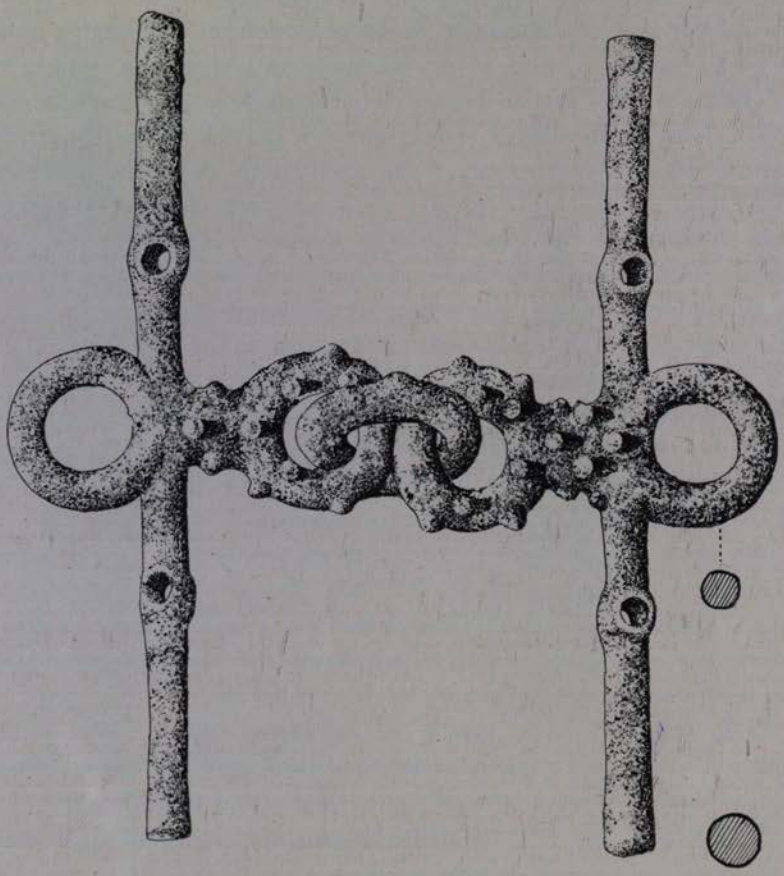
We show one sample of the atrocious bridle bits used by the Achaemenian cavalry (Fig. 30, PT5 45). The side bars, each with a pair of perforations and a rein ring, and the general model of the bit are similar in all cases; but there are variants in the arrangement of the ingenious torture devices on the bit proper.

Horn-shaped objects, mostly of calcareous stone, seem to be identical with bridle ornaments carved at the sides of the horses' heads on the reliefs. One such horn, of cream-colored and red stone, is shown in Figure 27 *h*. Tips of scabbards are suggested by semioval bronze

[25a] Or was our specimen a plowshare instead of a halberd?



PT4 1094



PT5 45

FIG. 30.—The bronze head of a battle-ax and a bronze bridle bit. Scale, 1:2

sheets with perforated margins. Further articles of equipment the remains of which were found may have been used by soldiers and civilians alike.

TREASURE HALLS

ARCHITECTURAL FEATURES

Paralleling to a certain extent the museum hall of the Tehran Gulistan palace, where the Shahs of recent times kept the gifts of foreign potentates and other treasures, the two large halls of the Persepolis Treasury had been filled with valued objects—tribute of subject peoples and loot of war.

One of these halls (No. 38) is entirely excavated, except for subsidiary rooms bordering it on the north and concluding the Treasury complex at this end. The extent of Hall 41 toward the west was determined by running a tunnel along its northern wall; but only its eastern section has been completely uncovered.

In five rows a hundred wooden columns carried the roof of Hall 38 (Fig. 31). They stood on rounded discoid stone tori of Darius type resting in their turn on square plinths. Each of the tori and plinths bears the chiseled mark of its craftsman. But since the destruction of the building many plinths and tori have been shifted in the debris or removed to be used elsewhere. The floor, worn in parts and patched in the bays of major circulation, has the red wash of the Darius buildings. The lighting problem was presumably solved by openings below the roof, raised above the narrow surrounding rooms. The latter may have had similar light holes, insufficient, to say the least. At this point we may mention that so far we have not yet found any receptacle of characteristic lamp form. There was only one white stone saucer with spout which might be considered a lamp.

We mentioned above that Hall 38 and the adjacent chambers to the west, north, and east belong to the last building phase of the Treasury. The original exit through the north wall of this complex, before Hall 38 was added, led through Room 36. This doorway was subsequently walled up, and the circulation to Hall 38 was then guided through the armory room No. 39. The constructors also changed their minds about the two doorways in the east wall of the hall giving access to the armory and toolroom No. 40. They were blocked up as

FIG. 31.—Excavating the Treasure Hall of One Hundred Columns (Hall 38 on plan, Fig. 11). View toward northeast

well. But four doorways lead through the north wall into as many rooms,[26] while there are two subsidiary chambers on the west. Of these, Room 43 proved to be a storeroom for weapons (cf. p. 44).

Hall 41 should have ninety-nine columns, as determined by Haines on the basis of the distance between the two rows of eleven columns each excavated to date and the extent of the hall toward the west.[27] While Hall 38 showed only such traces of burning as were clearly

FIG. 32.—The partly excavated Treasure Hall of Ninety-Nine Columns (Hall 41 on plan, Fig. 11). View toward southeast.

due to burning debris fallen from the neighboring rooms, Hall 41 had been totally destroyed by a violent conflagration. Even its column bases (Fig. 32), slightly larger than those of Hall 38 but otherwise identical, are all cracked, chipped, and discolored by the terrific heat. The masons' marks on the column bases of both halls are alike. The floor of the burned hall also has the common red wash of the other

[26] Since this report was written, these four rooms, together with the rest of the building, have been excavated. The northern entrance to the Treasury was found in the easternmost of the four.

[27] The number 99 was proved correct by subsequent excavations.

rooms in this complex. An unusual feature in Hall 41 is a mud-brick bench paralleling the southern and part of the eastern wall and covered with the common grayish green wall plaster. As mentioned

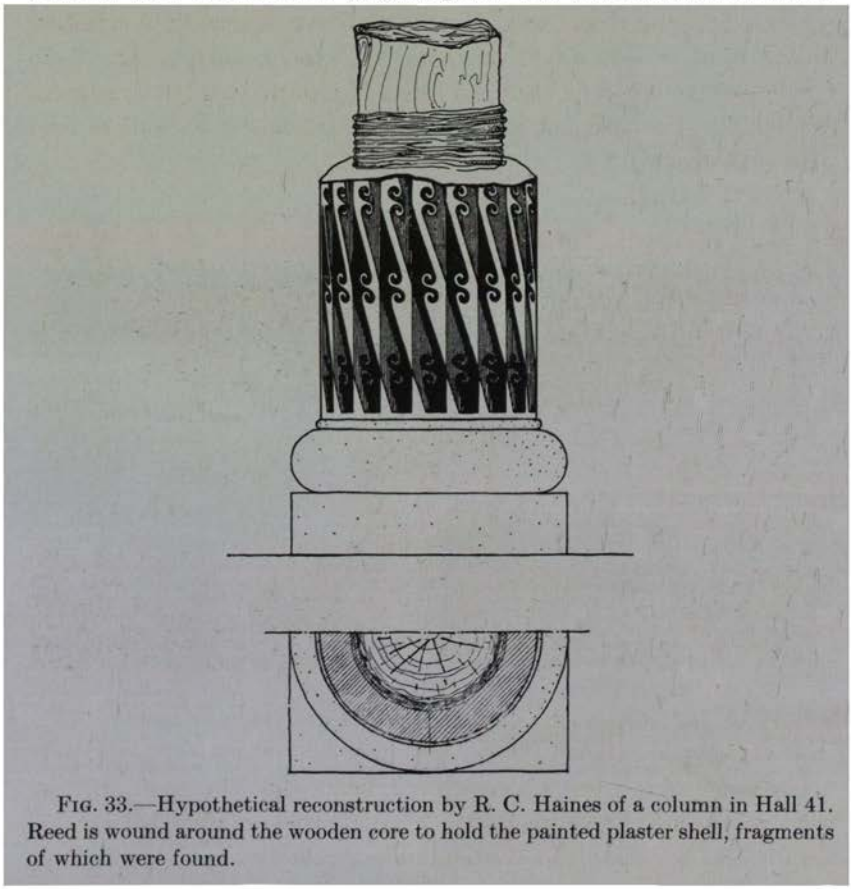


FIG. 33.—Hypothetical reconstruction by R. C. Haines of a column in Hall 41. Reed is wound around the wooden core to hold the painted plaster shell, fragments of which were found.

above (p. 19), the wooden columns of Hall 41 were apparently incased in painted plaster shells with blue, red, and white patterns (Fig. 33). Hall 41 as well as Hall 38 was entirely inclosed by narrow chambers.

CONTENTS OF THE TREASURE HALLS

ROYAL TABLEWARE, INCLUDING BOOTY FROM EGYPT

The most characteristic finds in the halls of the Treasury were shattered stone vessels in astounding numbers. The Macedonians

were rather thorough in cleaning out the Treasury of Persepolis. They do not seem to have left a single vessel of precious metal; but the royal tableware of stone would have burdened their baggage train without bringing much gain. We have no doubt that they smashed hundreds of vessels which they did not care to take along. Their vandalism preserved for us a great deal of information. Our restorers are mending the damage, assembling the fragments once more into objects of beauty.

PT5 513

FIG. 34.—Plate of speckled black and white granite. Scale, 2:5

The great quantities of fragments indicate that the treasure halls were used as storage places for the royal tableware. Even were it not for the fine workmanship and material of many vessels, the inscriptions indicate that they were used on the table of the King.

Polished plates, plain or footed, with well modeled rims were the most frequent forms; but platters, cups, bowls, and jars also occurred. There are vessels of speckled black and white granite (e.g. the plate PT5 513, Fig. 34) or of diorite in dark shades of gray, green, and brown. Hard chalcedony in its variants of agate and onyx was wrought with infinite pain into plates for the royal table. There are cup fragments of transparent rock crystal and parts of plates and platters of blue and gray lapis lazuli. Beautiful creamy yellow trans-

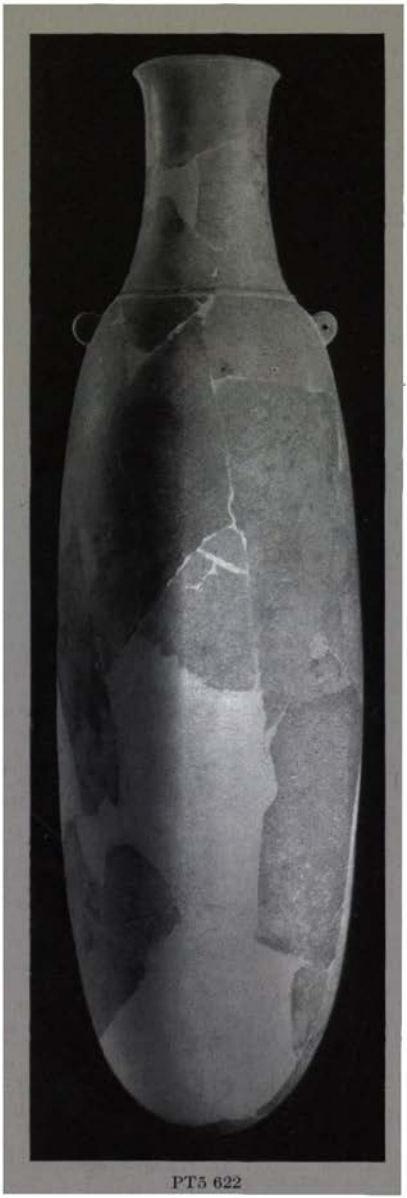
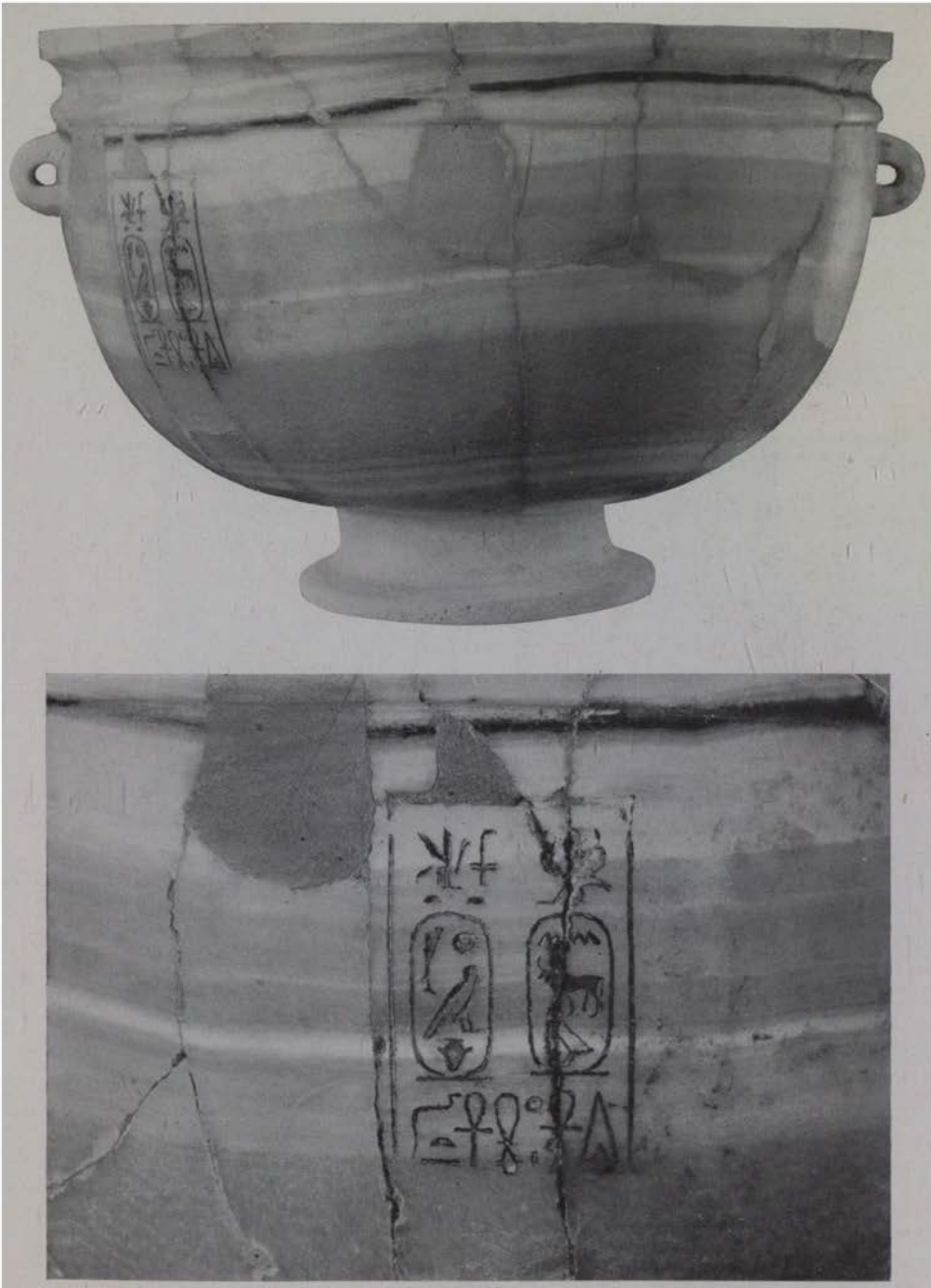


FIG. 35.—Jar of artificial paste of lapis lazuli blue (imported from Egypt?). Scale, 1:5.

lucent alabaster vessels may have been imported from Egypt; but hundreds of other plates of gray-green, often mottled, serpentine and of brown-and-purple-banded limestone were derived from native quarries. Saucers, plates, pestles, and mortars were made of an attractive green stone with gray veins. Marble and other calcareous stones, as well as slate and steatite, were also used for this purpose.

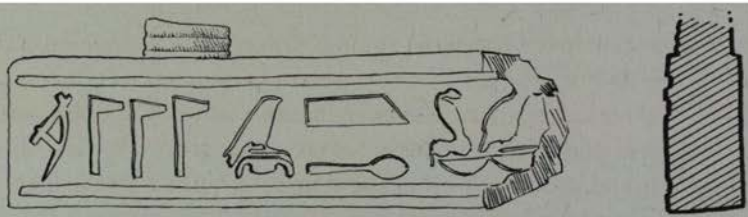
The most interesting material, employed for both vessels and other objects, is a composition paste in shades of lapis lazuli blue or turquoise green. The analysis of this paste is not yet available. It is quite possible that most or all articles of this material were imported from Egypt. The secret of its manufacture was certainly known in that country before the Achaemenian era (cf. as one piece of evidence the statuette base described below). We illustrate a tall, beautifully finished jar (Fig. 35) made of such paste in lapis lazuli blue.

It was mentioned above that alabaster vessels may have been imported from Egypt. In two cases we have proof. The cartouches of Nekau (Necho) appear on an attractive alabaster bowl, footed, creamy yellow with white and light gray bands (Fig. 36). This



PT5 103

FIG. 36.—Alabaster bowl (foot restored) with cartouches of Nekau (Necho). Bowl, 1:2; cartouches, 1:1.



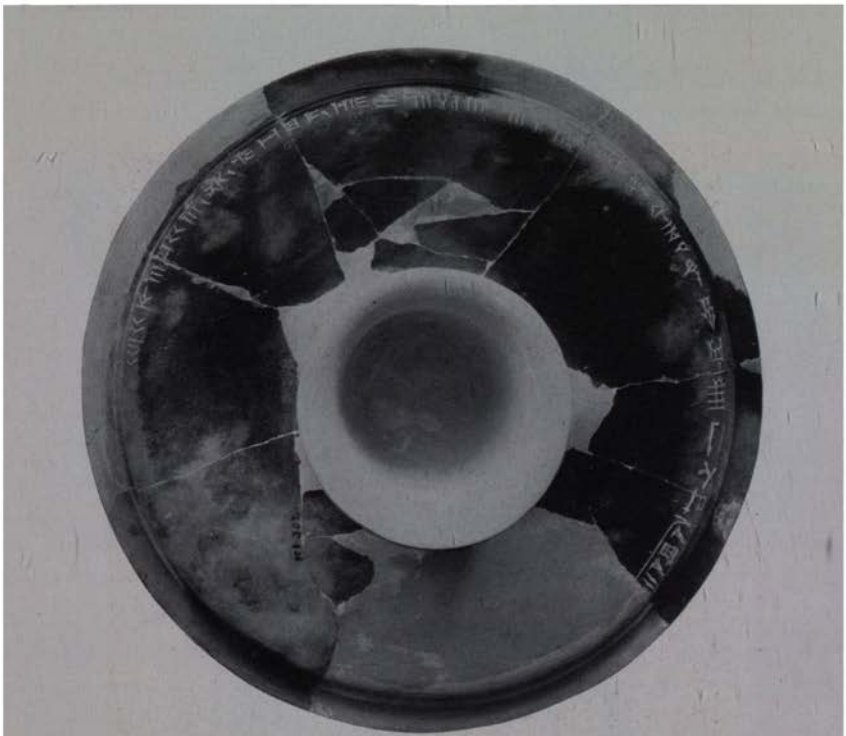
PT4 539

FIG. 37.—Base of blue artificial paste with names of Nekau (Necho). Scale, 3:4

PT4 1070

FIG. 38.—Alabaster fragment with cartouche of Amasis. Actual size

Pharaoh reigned from 609 until about 593 B.C.[28] He conquered Palestine and Syria but soon again lost these countries to the Babylonians, led by Nabopolassar's son Nebuchadnezzar, after the Babylonians together with the Medes under Cyaxares had given the deathblow to Nineveh and Assyria. Two of the names of Nekau appear also on

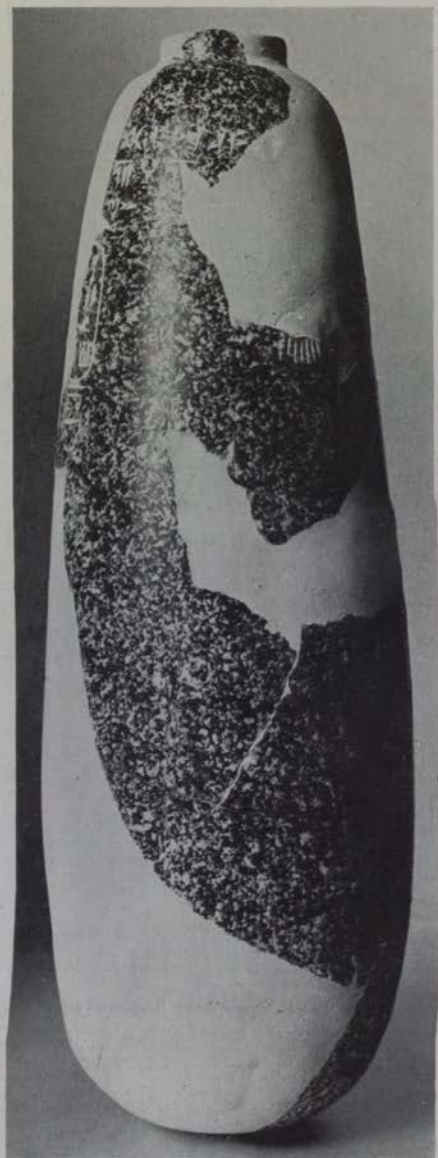


PT5 302

FIG. 39.—Plate of calcareous stone in cream and brown shades, burned black in parts, bearing quadrilingual inscription of Xerxes. Scale, 1:3.

the base of a problematical statuette or the like (Fig. 37), made of the lapis lazuli blue paste referred to in the preceding paragraph. We see that both the alabaster vessel found shattered in Hall 41 and the object of artificial paste are considerably older than the Achaemenian Empire and, with it, Persepolis.

[28] Cf. James H. Breasted, *A History of Egypt* (2d ed., rev.; New York, 1924) pp. 582–85.



PT4 306

FIG. 40.—Granite jar with quadrilingual inscription of Xerxes. Scale, 1:2

The cartouche of Amasis, ally of Croesus, the Spartans, and the Babylonians against Cyrus, the founder of the Achaemenian Empire, occurred on a section of a vessel-stand of alabaster (Fig. 38) and on an elaborate composite alabaster vessel found in many fragments in Hall 38. Amasis died in 526 or 525 B.C. and was succeeded by Psamtik (Psammetichus) III, who after six months was defeated and captured by Cambyses, Cyrus' son and successor.

It is safe to assume that either Cambyses or Darius, who in 522 B.C. followed Cambyses on the Achaemenian throne, removed from

PT5 7 PT5 8

FIG. 41.—Mortar and pestle of green, gray-banded stone. Scale, 2:5

the treasury of the Egyptian pharaohs the vessels and other objects which were finally deposited in the treasury built by Darius at Persepolis.

In reference to the Treasury archives we mentioned that Darius' name occurs on seal impressions. But the name of the founder of Persepolis is not inscribed on a single stone vessel, though we found his successor's name on twenty-two plates and jars from the Treasury. There are fragments bearing Xerxes' name in Old Persian, in Elamite, in Babylonian, and, finally, in Egyptian hieroglyphic. But it seems that on each of the vessels concerned his name, "Xerxes the Great King," was incised in all four languages, to judge by those vessels on which traces of the entire inscription are preserved (e.g. Figs. 39–40).

In the halls of the Treasury puzzling numbers of mortars and pestles were found (e.g. Fig. 41). All are made of the same green stone,

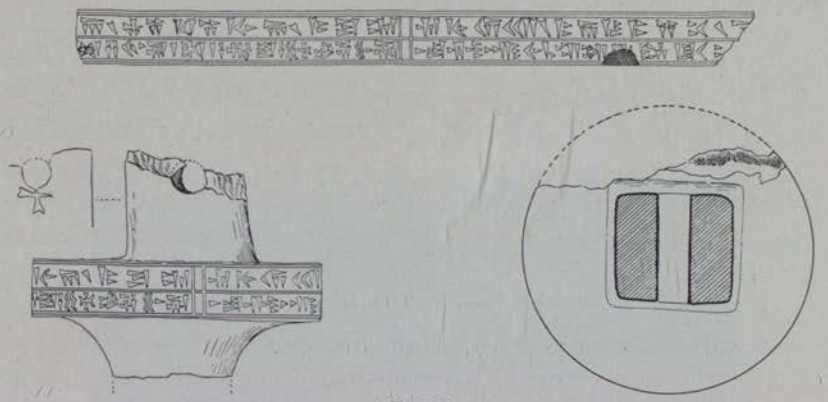
usually patterned with gray veins. Ink inscriptions in Aramaic occur on the bottoms of many mortars and on the discoid heads of the pestles, rarely on the pestle stems. Such Aramaic inscriptions are also frequently found on the outer bottoms of saucers and plates made of the same stone. We mentioned above that Eilers found the Treasurer's title in these inscriptions.

MISCELLANEOUS INSCRIBED OBJECTS

At this point we may consider other categories of inscribed objects, though they may not be characteristic finds from the treasure halls or were actually found at other spots. There is, for instance, a peg of lapis-lazuli-colored paste (Fig. 42) with a white-incrusted inscription in Old Persian, Elamite, and Babylonian stating that it was made "for the house of Darius the king." It was found, however, in Room 6 (plan, Fig. 64) of the northern series of the Harem section, which was constructed during Xerxes' time.

Another Darius inscription appears on stone weights, all found in rooms other than the treasure halls. The beautifully finished grayish green diorite weight PT3 283 (Fig. 43) was about 1 meter above the floor of Room 3 (plan, Fig. 11) in the southern part of the Treasury. The Old Persian section of the trilingual legend reads: "120 karsha. I (am) Darius, the great king, the king of kings, the king of the lands, the king of this earth, the son of Hystaspes, an Achaemenid." The Old Persian symbol for "hundred" has hitherto been unknown. The Babylonian version gives "20 minae" as the weight corresponding to 120 karsha. The weight of the stone is 9.950 kilograms. If we make allowance for chips missing at the lower edge, a mina is almost exactly 500 grams, and a karsha about 83.33 grams.[29] In this connection it is interesting to note a duck weight (not illustrated), such as is frequently found in Mesopotamia, made of calcareous stone, white with gray and pink shades but badly burned and crackled. It weighs 42 grams; but some grams should be added on account of the burning and of missing chips.

[29] For studies on Persian weights cf. F. H. Weissbach, "Zur keilinschriftlichen Gewichtkunde," *ZDMG* LXV (1911) 625–96, and "Neue Beiträge zur keilinschriftlichen Gewichtkunde" in *ZDMG* LXX (1916). As to Darius weights cf. his *Die Keilinschriften der Achämeniden*, pp. xxii f. and 104 f.



PT5 112

FIG. 42.—Peg of lapis-lazuli-colored paste with trilingual inscription of Darius. Scale, 1:3.

PT3 283

FIG. 43.—Diorite weight of "120 karsha" with trilingual inscription of Darius. Scale, 1:3.

In referring to the archives we mentioned the Babylonian votive cylinders (p. 43). On one of them McCown noted the words "king of the land of Assur." He also found the name of Ashurbanipal

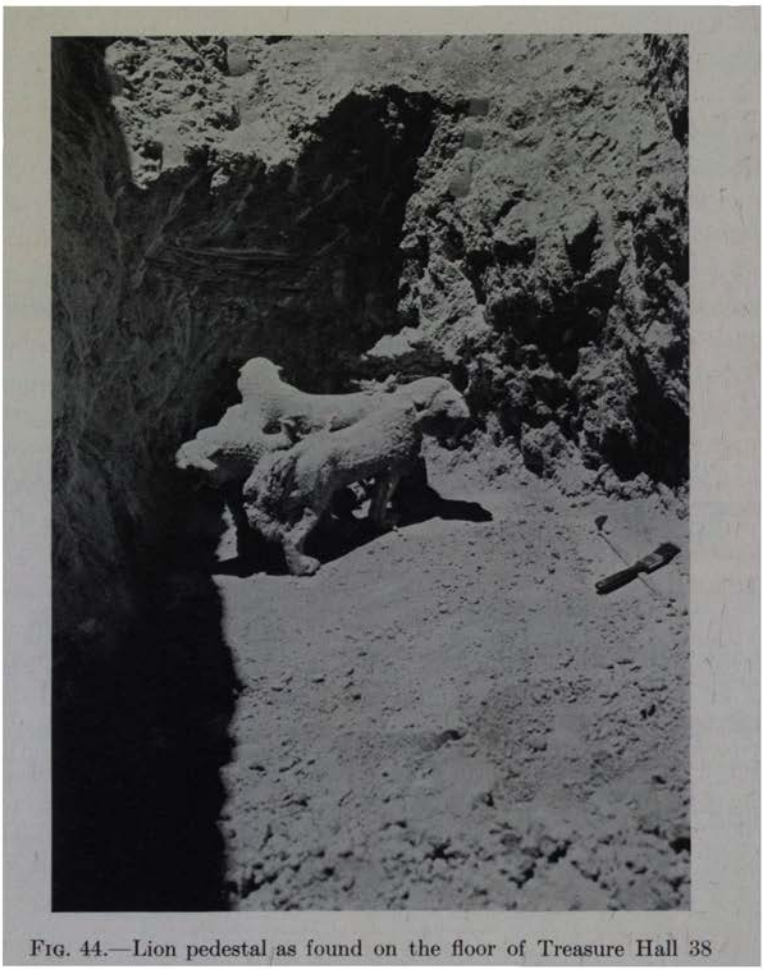


FIG. 44.—Lion pedestal as found on the floor of Treasure Hall 38

(669–626 B.C.) in one of a number of Babylonian inscriptions incised on eye stones (see below) and also on beads of various stones.

Further inscriptional fragments in Old Persian, in Elamite, and in Babylonian occurred, in different parts of the Terrace, on column tori and on problematical limestone slabs.

SCULPTURES FROM PERSIA AND OTHER LANDS

A magnificent pedestal composed of three identical bronze lions attached to one another and to a central bronze socket stood on the floor of Treasure Hall 38 (Figs. 44–45). The splendidly modeled face of each is shown snarling ferociously in fury. The mane and the furriest parts of the body are marked by a scale pattern of lozenges. The paws, in walking position, stand on small plates, perhaps to keep the heavy base from injuring fabrics or the like. Gashes on the back, on the belly, and on the right hind leg of each lion are puzzling. Perhaps they are casting-marks. We assume that this pedestal carried a single, though problematical, device, rather than that it supported, together with others, the legs of a throne, couch, or the like. The pole which once stood in the socket was supported by additional iron rods resting on the back of each lion, as shown by red-brown stains.

Another fine bronze sculpture is shown in Figure 46. The two galloping horses, cast in one piece, had once been attached to a slightly curved wall or other surface, as indicated by the curved form of the sculpture and by a rivet piercing the chest of one horse. Depressions in the side of the animal shown in full suggest former inlay work. It is quite possible that once a chariot was attached to these horses, to judge by the rein ring on the back. Only the heads are modeled individually, while the two bodies form one piece, hollowed out on the reverse. The rein is attached to a curious ear-shaped sidepiece of the bit. But all bits found during the excavations have straight or slightly angular sidepieces, identical with those on the Persepolis reliefs. Nor do such bits as appear on the bronze horses seem to be illustrated in C. J. Gadd, *The Stones of Assyria* (London, 1936), A. T. Olmstead, *History of Assyria* (New York, 1923), or U. Popplow, *Pferd und Wagen im alten Orient* (Berlin, 1934). Nevertheless, the style of our bronze sculpture reminds one of Assyrian models carved on stone.

Greece contributed its share to the Treasury of the Achaemenians. The beautifully modeled white marble torso of a seated woman lay in the debris of Corridor 31, west of the Court of Reception (Fig. 47). One hand belonging to this statue was found in Hall 38, suggesting that this was the original section where the statue was kept. The

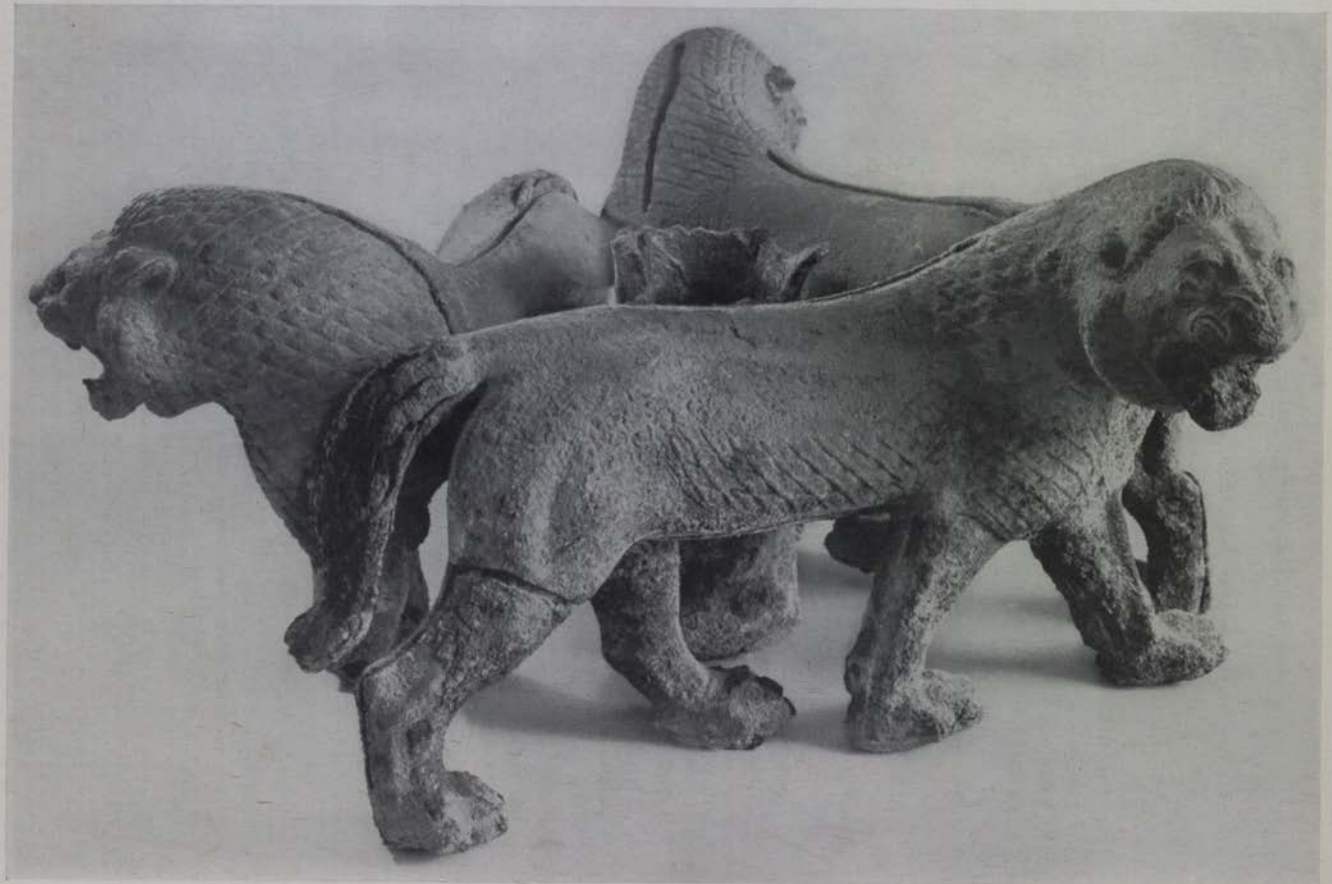


FIG. 45.—The lion pedestal. Scale, about 2:5

(missing) head was inclined toward the right. The right arm was apparently bent, with its elbow resting on the right thigh. The position of the left arm is doubtful; but it touched the side as far as the elbow. The right leg was crossed over the left knee. The woman sits on a cushion or the like. Below are remains of an oval process which was perhaps inserted into a pedestal. Although it would have been tempting to consider this statue as booty from Athens, which Xerxes invaded in 480 B.C., it rather appears to be somewhat later in date.[30]

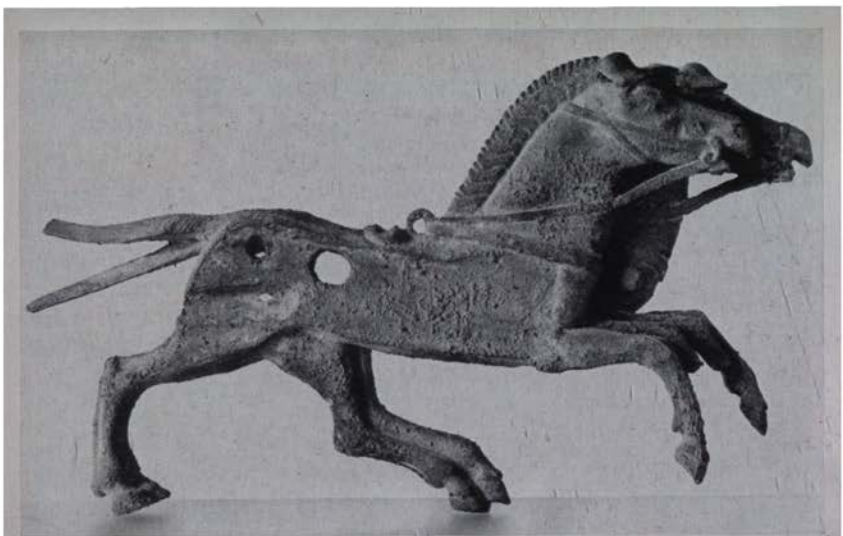


FIG. 46.—Two bronze horses cast in one piece. Scale, about 1:3

In referring to seals (p. 43) we mentioned that the Egyptian god Bes is several times represented among the finds from Persepolis. We illustrate two examples (Fig. 48), a tan and cream banded alabaster figurine (PT4 1062) and one of blue paste (PT5 299), both found in Hall 38. The former was attached to a vessel-stand, or the like, as indicated by fractures at either side and at the top of the head. An animal skin and a belt decorate rather than dress the little paste figurine.

[30] Miss Cleta M. Olmstead has made a study of this statue and determined it to be Ionic and not later than 450 B.C. Her paper is expected to be published in the near future.

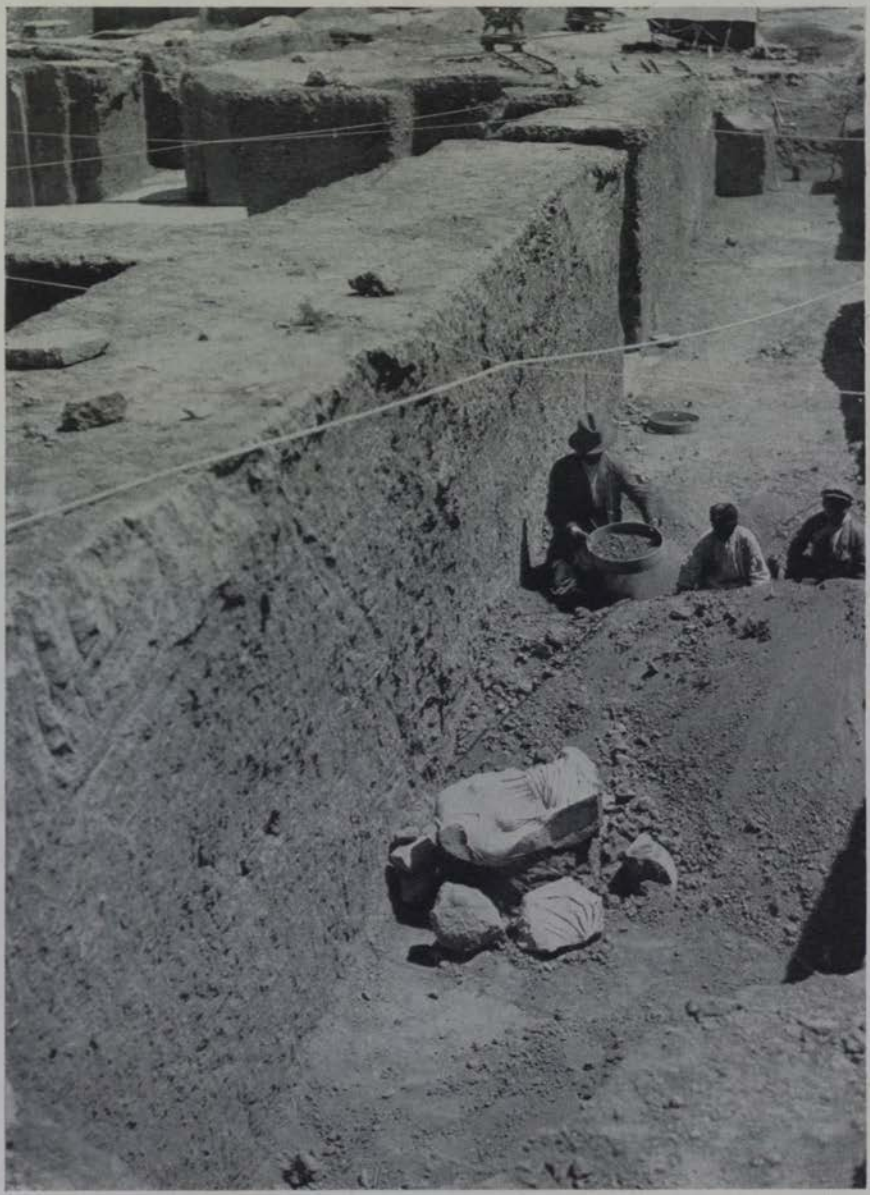


FIG. 47.—A Greek statue as found in the corridor beside the Court of Reception

The ram-headed Egyptian god Harsaphes[31] is represented by a small bronze statuette (Fig. 49). It lay in "Garrison Street," just outside the only eastern entrance to the Treasury.

Among the shattered stone vessels once stored in treasure halls 38 and 41, some interesting ones with sculptured handles—bowls, trays, and plates—could be assembled, or partly so. The white and

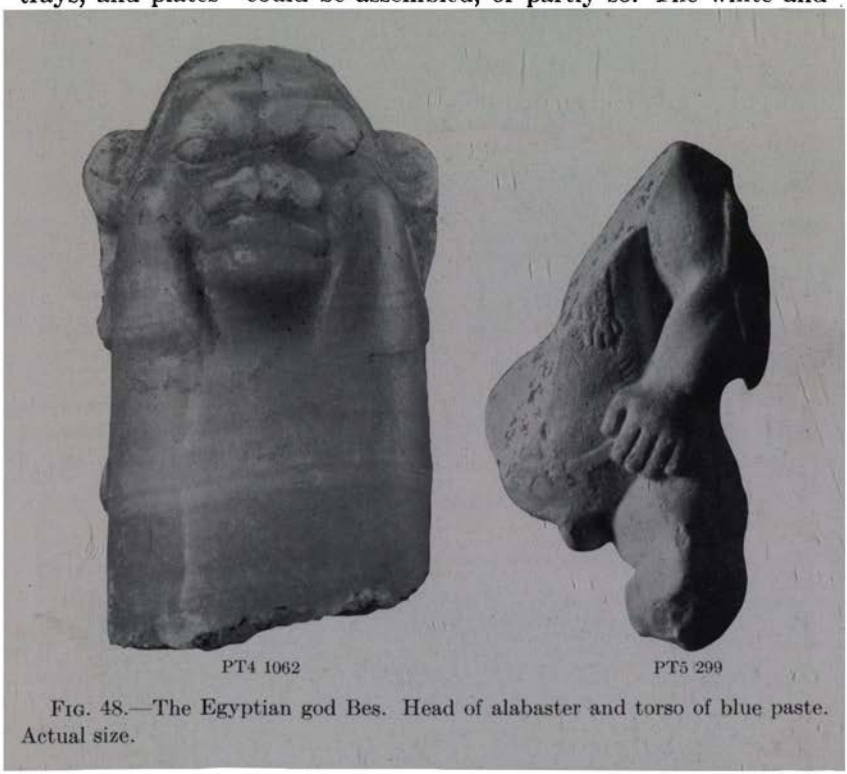


FIG. 48.—The Egyptian god Bes. Head of alabaster and torso of blue paste. Actual size.

black speckled granite bowl with four lion handles (Fig. 50) is again a historical document. Long before the time of Cyrus and Darius it had been used on the table of the Assyrian king Ashurbanipal at Nineveh, for McCown found his name in the inscription that partially encircles its shoulder. The hollow eyes of the lions were probably inlaid with precious stones. Pairs of holes beside the forepaws and one hole in each flank of each lion also indicate that additional ornamenta-

[31] Cf. Georges Daressy, *Statues de divinités* (Cairo. Musée des antiquités égyptiennes, *Catalogue général* XXVIII) No. 38502 on p. 135 and Pl. XXIX.

PT4 104

FIG. 49.—Bronze statuette of the Egyptian god Harsaphes. Actual size

PT5 156

FIG. 50.—Granite bowl with four lion handles. According to its inscription it once belonged to Ashurbanipal. Scale 2:5.

tion, perhaps plating of precious metal, had been applied. One handle of this vessel had been carried, by the looters presumably, to Corridor 31, while the rest of the vessel was scattered in Hall 41.

An attractive gray limestone tray with Egyptianizing swan handles and palmette (Figs. 51–52) came from Hall 38. Vessel legs were in many instances modeled in the form of lions' legs. Duck heads, once parts of vessels and sculptured to form single or multiple handles, frequently occur in the treasure halls.

Part of a receptacle or statuette is illustrated in Figure 53. It pictures a characteristic Achaemenian combat scene of king and lion. But there remain only the left arm of the king and the well modeled lion's head held by the king's hand. The material is red, yellow, and gray banded calcareous stone. The lion's eyes are inlaid with a green frit pupil set in blue paste.

There were great numbers of further sculptural fragments in the halls and also in the other rooms of the Treasury, as well as in other sections of the Terrace. We found small wings of bronze and of blue paste, inlaid beards of artificial paste, decorated sheets of bronze, parts of iron figurines with gold plating, and so forth. Many fragments of burned inlay work in bone appeared in Hall 41. They include floral patterns and parts of animals and human beings.

OBJECTS OF PRECIOUS METALS

It is adequate to mention the objects of gold and silver in connection with the treasure halls, although they occurred in many other rooms of the Treasury as well. This section might also be headed "Crumbs that Alexander left." The Macedonians were thorough in cleaning out the treasure house of Persepolis. It must have abounded in objects of precious metals, to judge by the many small everyday things of gold which had been disregarded or carelessly lost by those who collected the wealth of the Persian kings.

There are pieces of wire and tacks of gold, gold-plated silver wire, bronze nails with heads of gold or silver, and many strips of both metals. Objects of gold are actually more frequent than those of silver. Ornaments include buttons, ear pendants, finger rings, and beads of gold. One such bead, composed mainly of concentric rings of small spheres, is identical with a bead found in an Achaemenian

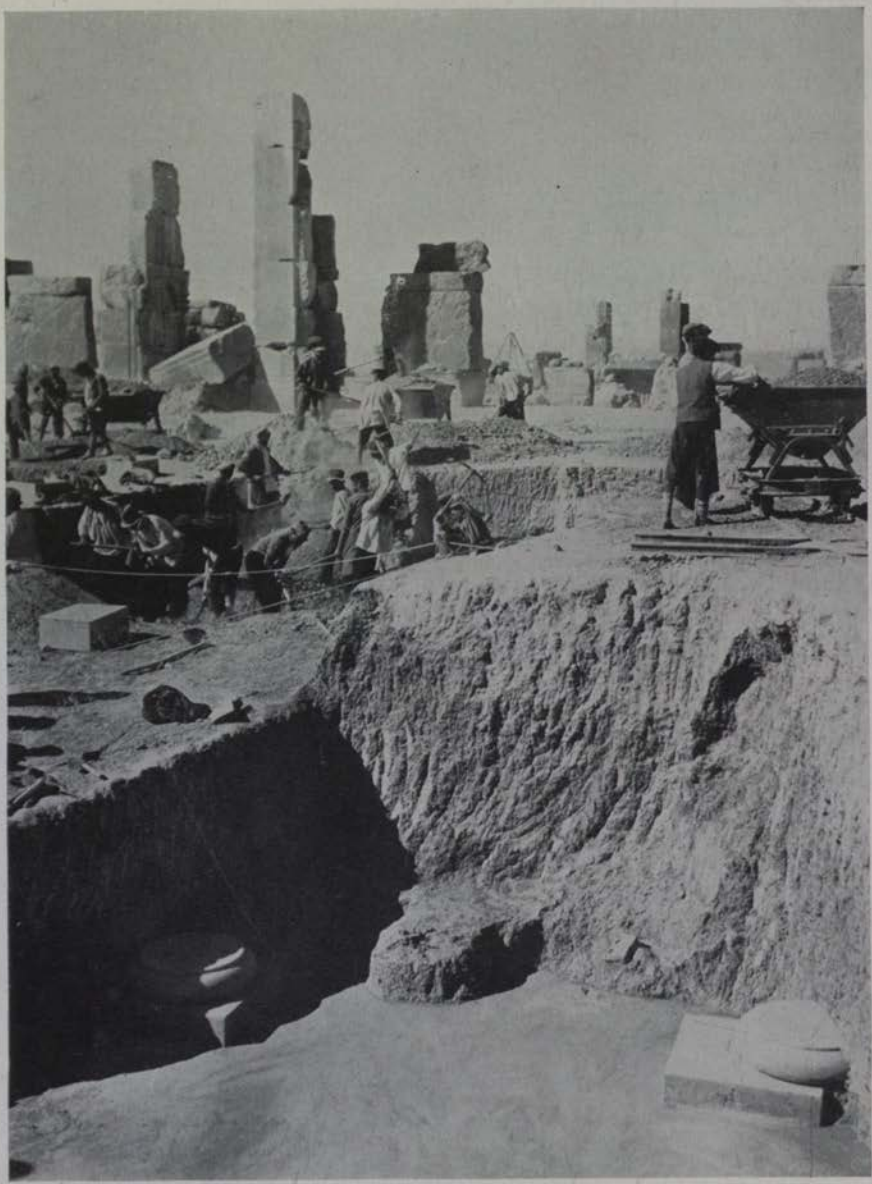
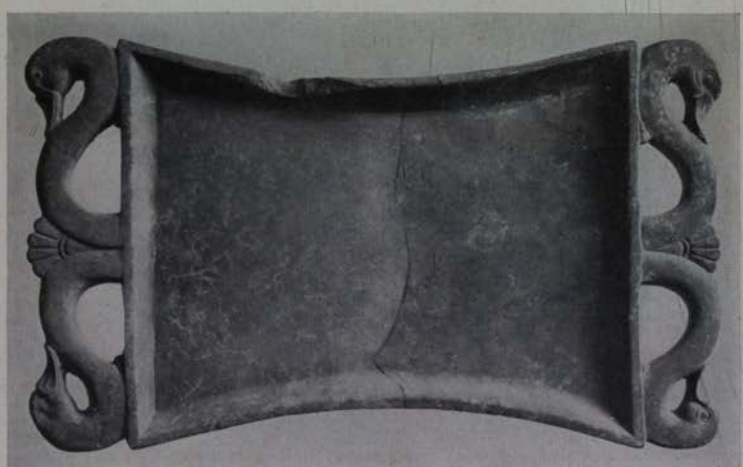


FIG. 51.—Find-spot in Hall 38 of a stone tray with swan handles (see Fig. 52) and of a bronze bit.

burial at Susa.[32] Rosettes, once perhaps sewn to garments, occur quite frequently. *Repoussé* patterns are found on various objects. Fragments of iron, parts of statuary, and ordinary objects such as spikes sometimes show plating of gold. There are also bits of cloisonné work, with green frit inlay, and beads in various forms—disks, cones, ovals, and the like.



PT5 726

FIG. 52.—Tray of gray limestone with elaborate swan handles, from Treasure Hall 38 (cf. Fig. 51). Scale, 1:4.

PERSONAL ORNAMENTS

Our Expedition files include long lists of the materials and of the forms of beads and pendants found in the Treasury and elsewhere. There are amethyst, lapis lazuli, carnelian, turquoise, chalcedony in all its varieties, artificial paste in blue or green, many kinds of common stone, coral, bitumen, shell, glass, frit, clay, bronze, gold, and one yellow amber disk. One white-etched carnelian sphere is decorated by an ancient process which C. L. Woolley traces from Ur and Kish to India, where it has been found at Mohenjo Daro and in later use throughout the northwest of India.[33] It also occurred at

[32] France. Délégation en Perse, "Mémoires" VIII (Paris, 1905) 54, Fig. 82.

[33] Joint Expedition of the British Museum and of the Museum of the University of Pennsylvania to Mesopotamia, "Ur Excavations" (London, 1927——)

prehistoric Tepe Hissar in northeastern Iran,[34] in the same substratum (IIIC) which marks the first appearance of amber in Iran.

PT5 293

FIG. 53.—Fragment of a statuette(?): combat between king and lion. Actual size

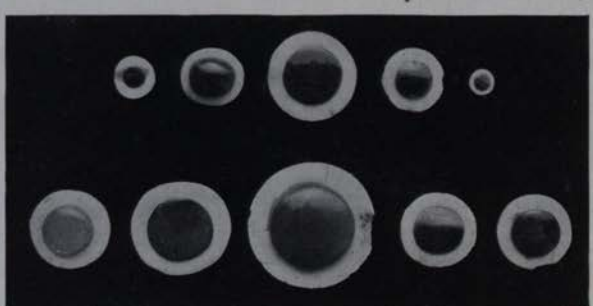


FIG. 54.—"Eye stones" of onyx, agate, and sardonyx. Scale, 1:2

The beads, pendants, and spacers found during the Persepolis excavations include all the common forms. We illustrate a series of

II 373 f.; India. Archaeological Survey, *Mohenjo-daro and the Indus Civilization.* . . . . Ed. by Sir John Marshall (3 vols.; London, 1931) II 583.

[34] Erich F. Schmidt, *Excavations at Tepe Hissar, Damghan* (Philadelphia, 1937) p. 223.

"eye stones" (Fig. 54) which certainly served as amulets, perhaps against the evil eye, in addition to being attractive ornaments. They are usually made of agate, onyx, or sardonyx. There is often a diametrical perforation. At times a Babylonian inscription is found on the mat reverse, while the obverse is always polished.

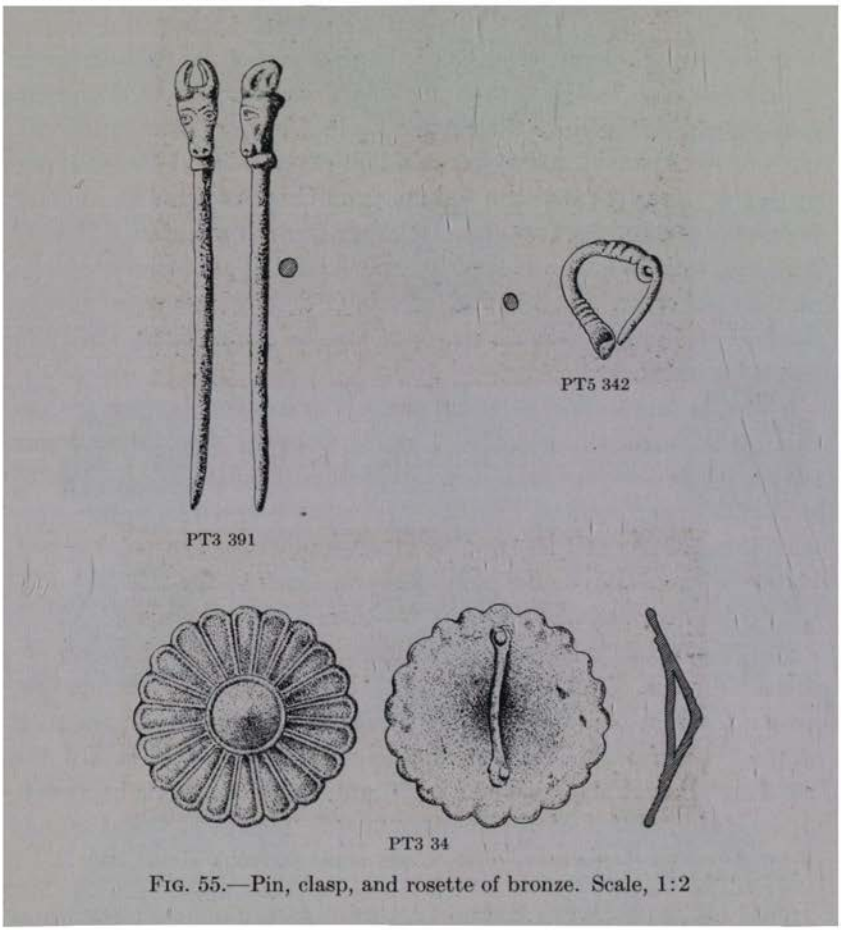


FIG. 55.—Pin, clasp, and rosette of bronze. Scale, 1:2

The objects shown in Figure 55 may also count as personal ornaments. The bull-head(?) pin PT3 391 was perhaps used as a garment pin. Fibula PT5 342 is a sample of several such clasps, while the bronze rosette with twenty petals (PT3 34) had likewise been fastened to a garment or to equipment.

COINS

Once certainly stored in special rooms, perhaps in the halls of the Treasury or in their subsidiary chambers, those coins found during the excavations had been lost in the dust of the floors in various parts of the complex.[35] Alexander's soldiers did not miss many coins of silver or gold.

It is astonishing that not a single Persian coin of the Achaemenian period was here found, though the darics are ascribed to the great founder of Persepolis by their name itself. The very foundation deposit of his Apadana contained gold and silver coins of Croesus, defeated by Cyrus the Great in 546 B.C.; and Croesus' coins were found in various parts of the Treasury. In Figure 56 a silver stater (PT4 411) is shown, with its design of lion and bull in combat—a design common on Croesus' coins. Another ancient coin (PT5 278), from 6th century Salamis on Cyprus, shows a couchant ram on the obverse, while the reverse is blank.

It is amusing to find at Persepolis a coin commemorating the defeat of the Persians at Marathon (491 or 490 B.C.). Shortly after this significant victory over the army of Darius the Athenians began to strike the design seen on PT5 798—the olive leaves of victory on the helmet of Athena and the waning moon behind her symbol, the owl. However, according to Newell our coin belongs to the middle of the 4th century B.C., not long before the Macedonian conqueror arrived.

The period of Artaxerxes II Mnemon also is recalled by an adversary's coins. Datames, satrap of Cappadocia, who became the leader of a rebellion against the central ruler, in Sinope struck coins of the type of PT5 328 approximately between the years 372 and 366 B.C.,[36] though this specimen itself is actually, according to Newell, an ancient imitation of the Sinopean type.[37] The coin shows the head of a nymph and, on the reverse, a sea eagle striking a dolphin.

[35] We are indebted to Mr. Edward T. Newell for identifying the coins referred to in this chapter.

[36] The name of Datames appears on such a coin illustrated in *Cambridge Ancient History*, Vol. of Pls. II 4–5 [*f*].

[37] Newell refers us to W. H. Waddington, E. Babelon, et Th. Reinach, *Recueil général des monnaies grecques d'Asie Mineure*, T. I, 1er Fasc. (2e éd.; Paris, 1925) pp. 194** f., No. 24, and Pls. XXV 18–19 and Suppl. O 7–8.

PT4 411 2:1

PT5 278

PT5 192 PT5 798 PT5 328

1:1

PT4 44 2:1

Fig. 56.—Coins from the Treasury

Coin PT5 192 is probably a Persic drachm; its mint was Chalcedon, Bithynia.

Our first thought on finding three Alexander coins, of which PT4 44 is a sample, was that they were a numismatic documentation of the destruction of Persepolis. However, Mr. Newell spoiled our story by attributing this coin and one of the others to about 316–312 B.C. The two were minted in Persia after Alexander's death; the third coin was struck late in his reign, about 325 B.C., at Babylon. These coins were found, close together, not far from the only exit of the Treasury toward the east. They must have been lost or hoarded in the debris at this spot long after the Treasury was destroyed.

PASSAGES AND OFFICES(?)

We mentioned several times that the Treasury had only one exit to Garrison Street in the east. This gateway opens from Room 13 (plan, Fig. 11), which had at first been connected with the row of narrow armories and toolrooms to the north; but the door through the northern wall of Room 13 was subsequently walled up, and the route of circulation led only through the rooms to the south. There was access to the Court of Reception through Room 12 to Portico 18; but all normal circulation apparently avoided the court and was directed through Room 10, the very narrow passage No. 9, and the suite of small chambers (Nos. 24, 26, 27, and 28) to Courtyard 29 in the southern and original part of the Treasury.

The only exit to the north, before Hall 38 was added, led from the east portico of the Court of Reception through a suite of small chambers (Nos. 16, 15, and 36) to the subsequently blocked doorway near the northeast corner of the building as it then stood. The doorways of these three passages were decorated with a painted pattern in red, blue, and white, restored by Noyes as shown in Figure 17. So far we have noticed this polychrome frame only here and at the doorways of the Court of Reception.

After Hall 38 was added, the former exit through Room 36 was blocked, and the central section of the Treasury was connected with the new hall by a doorway through armory room No. 39, opening into the long corridor No. 31, which in its turn gave access to Hall 41 and the Court of Reception. It is curious, however, that this corridor

is not continued by a system of detour circulation which would avoid the Court of Reception en route to the southern section of the Treasury through the suite from Room 24 southward. This would suggest that the part of the Treasury accessible from Corridor 31, that is, the area of the treasure halls, was not open to general circulation—which after all is quite logical in view of the contents of these halls. A ramp (No. 25) led from Room 24 (a vestibule) to the roof. It is simply an inclined track in the thick wall between Passage 9 and Room 8.

FIG. 57.—Southern section of the Treasury. Courtyard 29 with drain

For the time being we assume that the rooms so far excavated in the southern section of the Treasury were used as offices rather than for the storage of royal goods. But we may modify our opinion after the rest of the building is excavated. At any rate, we do expect another treasure hall in the southern section, corresponding to the halls added toward the west and north (Hall 41, then Hall 38), or a number of smaller divisions fulfilling the same purpose.

It is to be assumed that the dignitary reporting to the King on the Treasury relief had his offices in the complex under consideration. The contents of the southern rooms, Nos. 8 and 5, with four subsidiary

chambers (Nos. 1–4), do not include objects of domestic use, such as vessels, common utensils, and the like. In Room 8 two seal-impressed clay labels and a stamp seal occurred; but there were also some iron

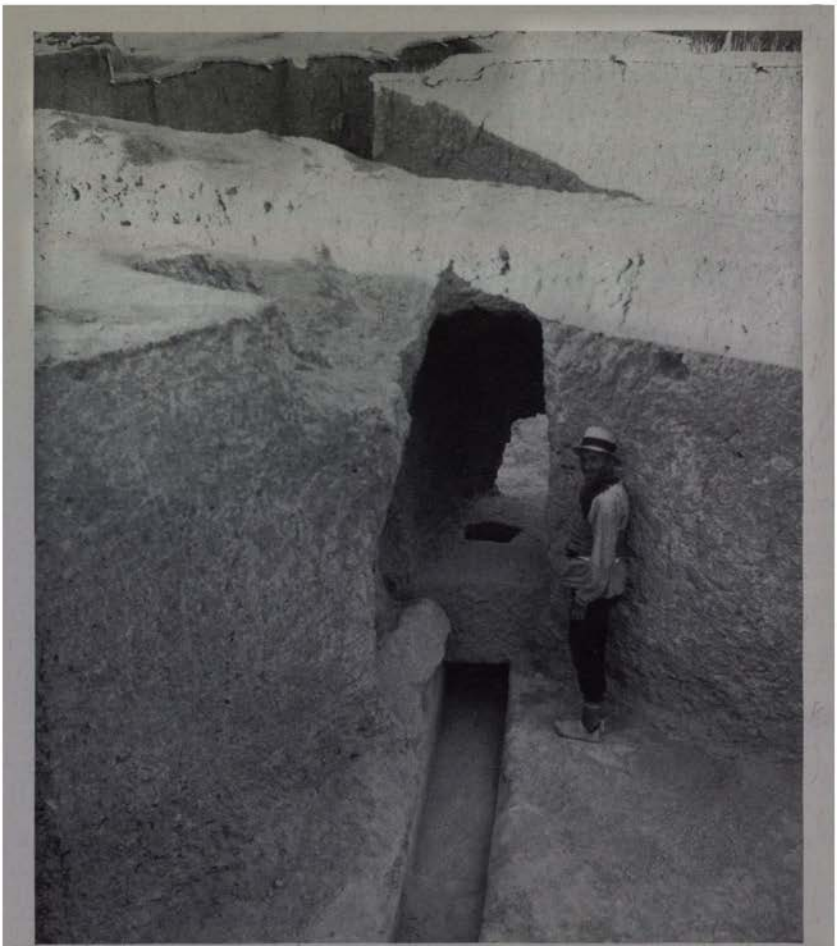


FIG. 58.—The drain of Courtyard 29 with capstone inside a corner

armor scales, a little gold rosette, and some beads. A further stamp seal lay in Courtyard 29, and a tablet was found in its eastern portico (No. 6). Room 5 must have contained much inflammable material, to judge by the violently burned walls of its southern half. There were no finds

to suggest its use, while the above mentioned seals, labels, and tablet fit quite well with the identification of this group of rooms as offices. The Darius weight illustrated in Figure 43 was found in the north end of Room 3; it is not out of place in office and record rooms.

Six discoid Darius bases in Room 8 and five in Room 5 indicate the number of wooden columns that once carried the roofs. The four bases of Portico 6 rest on square plinths. A drain (Fig. 57) of well wrought, hollowed-out stone crosses Courtyard 29. It collects the drainage of the northeast corner through a large pierced capstone, shown in Figure 58.

MISCELLANEOUS FINDS AT PERSEPOLIS

TOOLS AND UTENSILS (FIG. 59)

In the Treasury small objects of daily use are incidental. They may have been lost by servants, guards, or other transients. On the other hand, a well stocked storehouse for the royal household and for the royal guards should be supplied with ordinary essentials as well as with the treasures of the King.

Spool-shaped bronze pulleys, sometimes preserved on an axle of iron, had certainly been stored in the badly burned armory and tool-room No. 40. A number of such pulley wheels, particularly if used in combination as a tackle, could well have lifted considerable weights. We do not know whether they had actually been employed for the lifting of the formidable column drums, the door lintels of stone, and so forth. Still, they suggest the possibility.

The fine bronze pestle PT5 376 came from Room 37, likewise in the northeastern tier of tool- and weapon rooms. Its form is identical with that of the pestles of green stone so frequent in Hall 38. The bronze "doorknob" PT5 814, of very modern appearance, was presumably used as such at one of the northern portals of the Hall of One Hundred Columns. It lay not far from the western of the two guardian bulls flanking the entrance.

We illustrate, further, a bronze hoe or scraper (PT3 258) found in duplicate in the quarters of the garrison. The iron saw blade PT5 254 was somewhat out of place in Treasure Hall 41—except as an instrument of pillage—while an iron digging-tool (PT3 343) was appropriately lying in the moat outside the eastern Terrace defense.

Further utensils scattered about in the floor refuse of the various excavated buildings include awls, needles and pins of bronze, spikes, nails and pegs of bronze or iron, bronze rivets, clamps, hinges, crucibles, and a gouge(?). There were also many blades of iron knives, straight or curved, with blunt or pointed ends. We may mention at this point that the masonry clamps of Persepolis were of iron, bronze, and lead.

Implements of stone include simple whetstones and polishers, be-

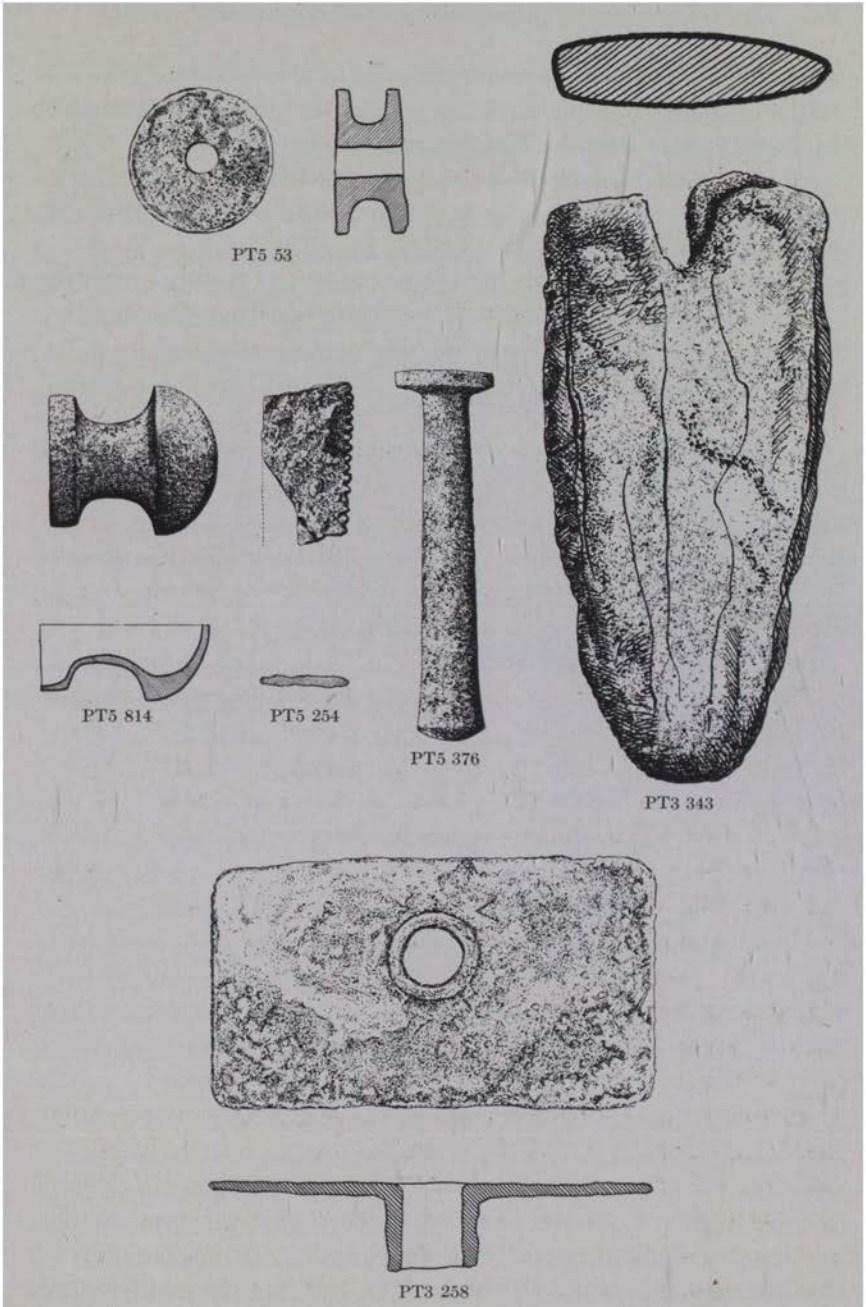


FIG. 59.—Metal tools and utensils. Scale, 1:4

sides the mortars and pestles mentioned above. There is also one trapezoid loom weight of baked clay. Spindle whorls are of stone or baked clay, plano-convex, semiglobular, biconoid, and discoid.

Bone was used for toggle pins, grips of implements, lids of small vessels, small cylindrical game pieces, and scabbard tips, also for inlays (see p. 71).

ACHAEMENIAN GLASS AND POTTERY

Glass vessels are rather rare. There are only fragments of beakers, bowls, and bottles (Fig. 60). A few sherds, such as PT3 336, entirely

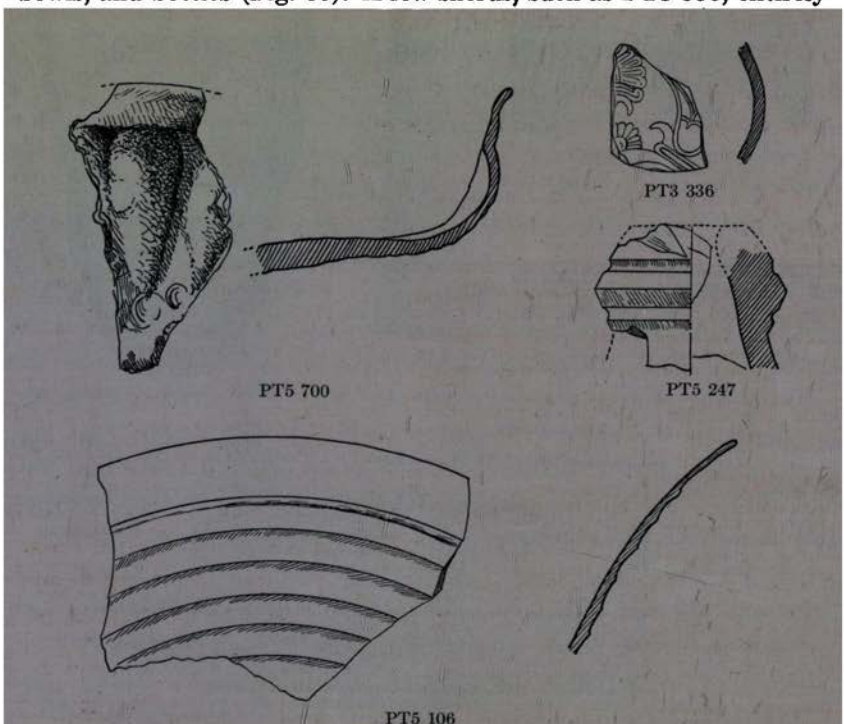


FIG. 60.—Achaemenian glass sherds from Persepolis. Scale, 1:2

covered with a white film of decomposition, are delicately modeled, presumably mold-blown. A bowl of perhaps identical technique with deep flutes is represented by sherd PT5 700, likewise coated with a thick white film over the colorless, transparent body. Wheel-cut

grooves and corrugations show on a transparent, iridescent bottle fragment (PT5 247) and on an equally colorless but iridescent bowl sherd (PT5 106). At times the glass body appears faintly green; but as a rule the Achaemenian glass vessels, as defined by the fragments found at Persepolis, are not tinted.

The Treasury contained hardly any pottery. The quarters of the garrison supplied the vessels to be described. All of them are late Achaemenian, for pots in soldiers' quarters do not last long.

The common vessel types are as follows: tall and slender jars for water or other beverages, canteens, pitchers, bowls, small jars, bottles, and storage vessels. Cups, though not found, were certainly present. The absence of lamps is strange. All pots were turned on the wheel. In the few garrison rooms excavated so far we have found only one glazed vessel (Fig. 61), and its glazing is rather rudimentary. The small bottle, with fine, yellowish brown paste, has a thin mat turquoise-blue coat, now turned yellow at most spots and flaked off in part.

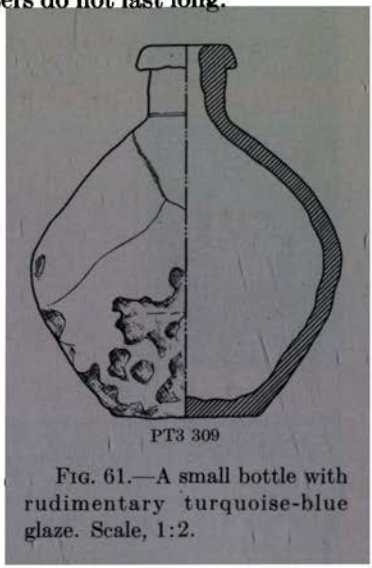
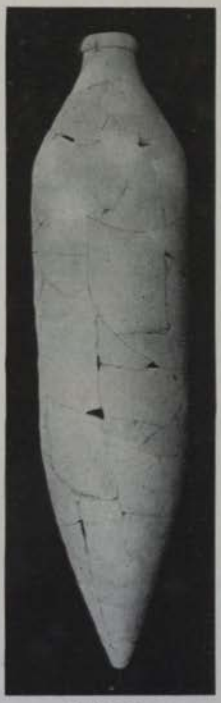


FIG. 61.—A small bottle with rudimentary turquoise-blue glaze. Scale, 1:2.

Tall, slender jars with pointed bottom, such as PT3 311 (Fig. 62), must have been imbedded in the floor or supported in some other manner. The vessel illustrated has a medium, red-brown paste and a somewhat lighter surface. The ovoid jar PT3 146, with medium, brown, slightly yellowish, paste, is coated with a dark brown wash over its red-brown, wet-smoothed surface. The neck is pressed outward. Canteen PT3 145 has a plano-convex body adapted for carrying. Its paste is medium fine, light red-brown. The surface is red-brown; pronounced concentric wheelmarks on the convex belly give a somewhat ornamental effect.

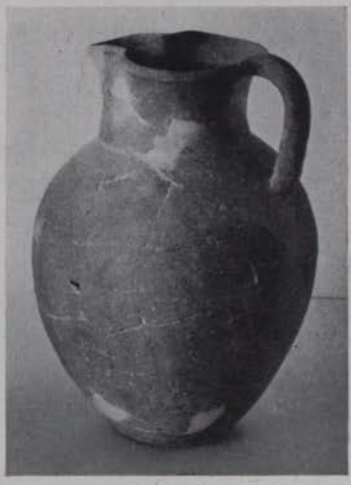
The bowl-shaped vessel PT3 261 has a spout with trefoil orifice. The surface and the medium fine paste are red-brown. Pitcher PT3 294, finally, has a broad trefoil orifice, gray-brown, medium fine



PT3 311

PT3 145 PT3 146

PT3 261



PT3 294

FIG. 62.—Achaemenian pottery from the garrison quarters. Upper row, about 1:12; lower row, 1:6.

paste, and a dark brown, almost black, slip speckled with many small, light-colored pittings.

For the time being we omit the description of many vessels found in a secondary room which was built into the north end of the street separating the Harem from the Treasury. This room can hardly have been built during the occupation of the adjacent structures. Although we must admit that the ceramics here found are similar to or in part identical with those of the garrison quarters, according to their find-spot they are post-Achaemenian.

TESTS, CLEARANCES, AND RESTORATIONS ON THE PERSEPOLIS TERRACE

THE WELL AT THE BASE OF THE "MOUNTAIN OF MERCY"

A deep shaft cut out of the living rock to a depth of more than 24 meters was the emergency well of Persepolis (Fig. 63), in addition to

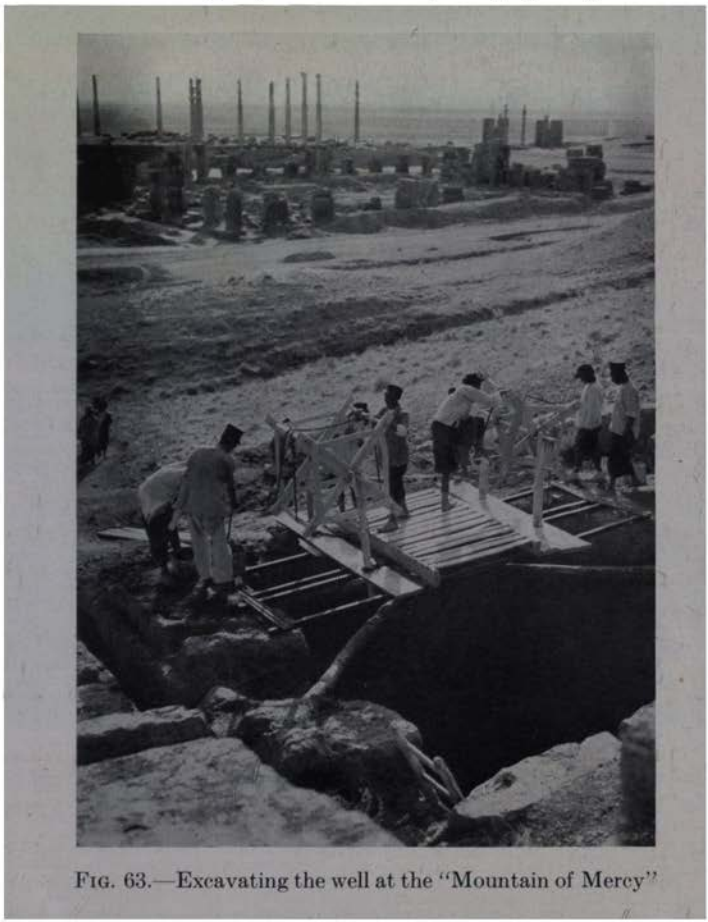


FIG. 63.—Excavating the well at the "Mountain of Mercy"

the above mentioned drainage (and reservoir?) system and, perhaps, hitherto undiscovered subterranean basins. The well is on the slope

of the eastern hill near its foot (Fig. 5 *Q*) but outside the fortress wall at the eastern Terrace edge. The retaining wall, however, seems to have included and protected the well, as suggested by its turn marked on the plan in the northeast corner of quadrant HG. It would be logical to postulate at least a small gate in the fortification directly west-southwest of the well.

The well shaft, with an aperture of about 4 × 4 meters, was filled with dirt and rocks to a point 2.5 meters below the edge. We excavated it to a depth of 24 meters without striking the bottom. The work was discontinued in order not to endanger the laborers. Besides that, at this stage the rains of autumn started, and in the course of the winter the well was entirely filled with water draining down the slope. In the same manner the well had been filled in ancient times. Canals cut out of the rock slope had caught the drainage and carried it to the aperture, while others took care of the overflow. Several deep grooves at the edge had accommodated beams to which the ropes for pulling up water had been attached.

The debris filling the well shaft contained mainly objects of the Islamic era. There were four identifiable coins, all belonging to the Mongol period. A few sherds of stone vessels were Achaemenian. It is, of course, regrettable that we could not penetrate to the original bottom, where some interesting objects might have been expected. The only archeological results of value for us are the determination of the minimum depth of more than 24 meters and the fact that the well is not connected with the subterranean system of canals. Our Persepolis camp had the major advantage of this test, for it uses the winter water gathered in the ancient well to irrigate its garden on the slope of the "Mountain of Mercy."

ROOMS OF THE HAREM GUARDIANS

Comparison of the plan of the southern section of the Harem, excavated by Herzfeld, with the plan of the northern rooms (Fig. 64), makes it obvious that the latter complex served a different purpose. Considering, further, that the main entrance to the Harem was situated here, we assume that the quarters under consideration were those of the head guardian, that is, eunuch, and his attendants.

The plan shows, roughly, a principal room (No. 5) distinguished

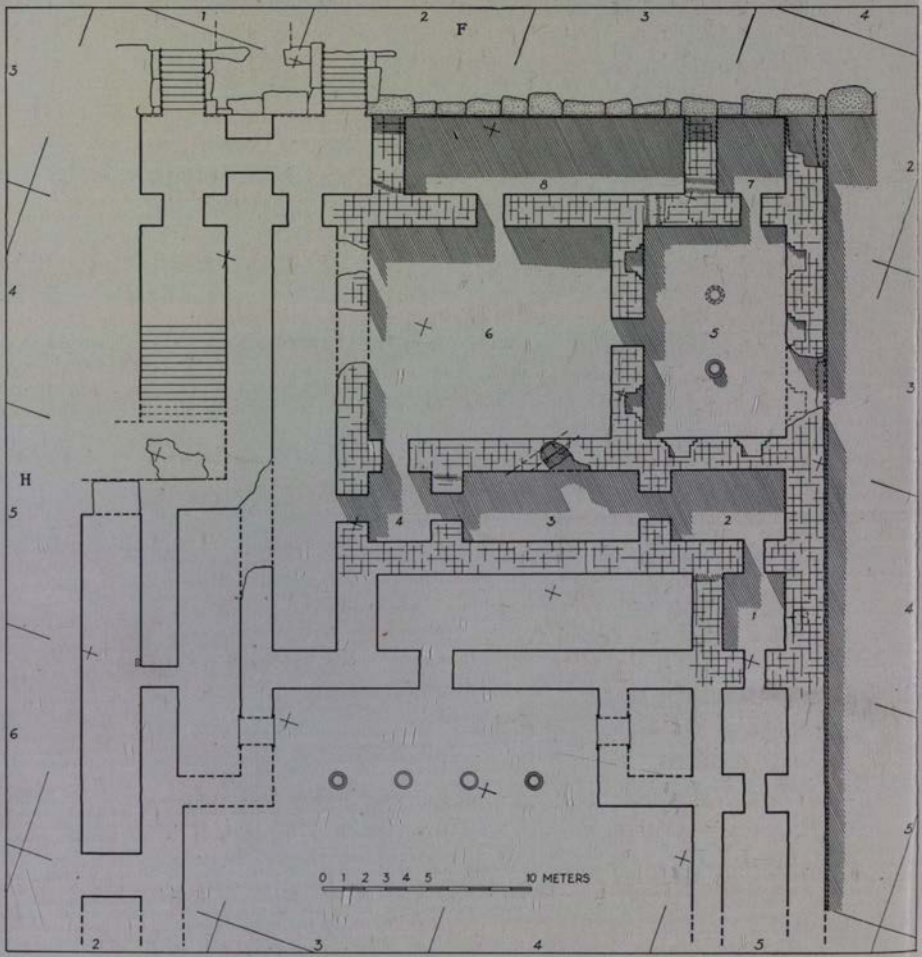


FIG. 64.—Plan of the northern part of the Harem. Scale, 1:300

from the others by wall niches and by two columns with bases of the floral Xerxes type. The form of these bases and the absence of the red floor wash of the Darius buildings indicate that these rooms belong to the time of the Harem of Xerxes, which had been rebuilt on the site of Darius' *andarun* ("inner," i.e., women's quarters). Narrow units inclose this main room and a courtyard (No. 6). The northern rooms (Nos. 7 and 8) use for their north walls the bedrock of the platform of the Hundred-Column Hall. The rock face is plastered with the same grayish green coat as the mud walls. The latter are built with bricks of the same dimensions as the walls of the Treasury of Darius (33–34 cm. square and 12–13 cm. thick).

The rooms and stairs previously excavated by Herzfeld (left unshaded in Fig. 64) indicate a connection of the Harem with the Hundred-Column Hall by means of the stone stairs directly west of Room 8, and presumably with the Tripylon via the mud-brick stairs west of Room 6.

The contents of the northern series of Harem rooms gave very little information. As a matter of fact, most of them were sterile as to finds. Only Room 8 supplied an object of outstanding interest, a wall(?) peg of lapis-lazuli-colored paste with a trilingual inscription of Darius (see Fig. 42). In the same room were other, rather unrelated things: an eye stone, a wing-shaped fragment of sheet bronze, an iron clamp, and two strap buckles of bronze. The objects, mainly pots, which occurred in the secondary rooms blocking the street between this section of the Harem and the Treasury belong to a post-Achaemenian period, as mentioned above (p. 87).

THE HILLOCK

A smooth truncated-conical mound about 3 meters high stood on the elevated platform between the Harem and the Hadish of Xerxes. It proved to be entirely composed of small rubble, construction debris, presumably from the Hadish, and sterile as to finds. However, we proceeded to test in one square (IF 11) the terrace below its base. Occasional fragments of objects kept us curious and induced us to penetrate into the fill of rubble and earth. At a depth of several meters, but still considerably above the level of the Harem, the well preserved foundations of a building appeared, deeply buried below the

artificial terrace from which a stairway with an inscription of Xerxes leads up to his palace level.

Quite a few instructive objects occurred in the parts of three rooms excavated so far. There were horn fragments of zoomorphic stone capitals, parts of small sculptures in blue paste, fragments of trilingual inscriptions on flat stone slabs and on column tori. The column bases found in the filling of one of the rooms are of Xerxes type; but none stood *in situ*.

If this puzzling structure was built by Xerxes, he not only razed the Harem building of his father to build his own in its stead but also buried a structure of his own, perhaps an early section of his Harem, below an artificial terrace. The reason for so doing would have been the construction of his residential palace, directly west of the covered-up building. The constructors of his palace could equally well have thrown the debris to the south; but in that hitherto unexcavated section of the Terrace may have been the constantly needed kitchens and domestic storerooms.

Only the hillock and the uppermost layer of the artificial platform consisted of obvious construction rejects, that is, stone chips. The filling of the rooms consisted of earth, reaching above the preserved wall tops.

We may expect interesting information in this, perhaps the only building of Persepolis which was not destroyed or rifled by Alexander's soldiers. It may contain clean-cut material of the time of Xerxes and Darius. Again, further work in this building may change our ideas.

THE PORTICO OF THE HUNDRED-COLUMN HALL

Herzfeld discovered in the southeast corner of the Hundred-Column Hall (Fig. 5 *N*) a stone slab stating in Babylonian that Artaxerxes (I) erected this structure on the foundation prepared by his father, Xerxes.[1] This settles the question of the origin of the Hundred-Column Hall, though it does not tell us why Xerxes should have desired a second audience hall in addition to the spacious Apadana which he completed. We are inclined to believe that the Hall of One Hundred Columns was intended for functions distinct from those of

[1] Now published by Herzfeld in "Altpersische Inschriften" (*AMI* 1. Ergänzungsband [1938]) p. 45, No. 22.

the Apadana, though of course also meant for large gatherings before the throne.

It is outside the scope of this report to give a description of this building or of others that were known before. Our work in front of the Hundred-Column Hall aimed mainly at clearing the entrance portico by removing the piles of excavation debris dumped here, presumably by the Governor of Fars in 1877.[2]

The excavations verified the former, theoretical restoration of two rows of eight columns each in the entrance hall. However, their capitals were not double-headed bulls as assumed in Marcel Dieulafoy's restoration.[3] They were man-bulls such as found by Herzfeld in the debris of the Tripylon. Contrary to Stolze's impression,[4] the portico of the Hundred-Column Hall, particularly the plaster of the mud-brick sections, showed many traces of the conflagration that destroyed the building. The floor too, as he states, was covered with a layer of burned debris.

Continuation of the excavations will be needed to define the guard-rooms at either side of the entrance hall and the course of the outer mud-brick inclosure. It is much closer to the structure than assumed by Sarre,[5] and it may not extend northward to include the unfinished portal. Along the eastern front of the building, narrow rooms, not shown on the plan, have been partly uncovered. Here too work should be continued so as to link up the plan with the Treasury excavations. The north front of the portico seems to fade, without even a step, into the extensive courtyard area filling the northern part of the Persepolis Terrace.

We did not expect any particular finds in this purely architectural clearing of the portico. There was, of course, a chaotic mass of column fragments and stone blocks of the north front of the hall proper; but two beautiful objects occurred in this debris: the battle-ax of bronze

[2] See F. Stolze, *Persepolis* (2 vols.; Berlin, 1882) I, "Vorwort . . . . ," p. [1]. G. N. Curzon, *Persia and the Persian Question* (2 vols.; London, 1892) II 177, says instead that the excavations were conducted in behalf of the Governor by Dr. Andreas in 1878.

[3] *L'Art antique de la Perse* (5 vols.; Paris, 1884–89) III, Pl. VIII.

[4] Stolze, *op. cit.* II, "Bemerkungen," p. [4].

[5] *Die Kunst des alten Persien* (Berlin, 1922) plan on p. 9.

illustrated in Figure 30 and the two bronze horses shown in Figure 46. A medley of smaller things included a cylinder seal, eye stones, a lion's paw of blue paste, bronze nails with heads of gold, beads, an

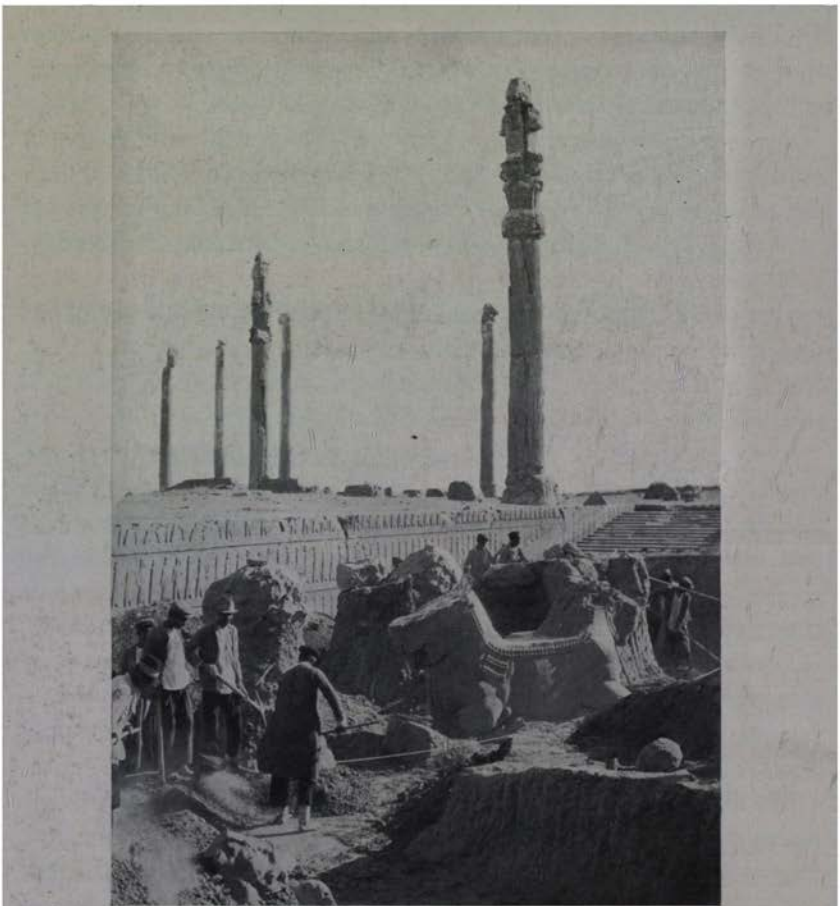


FIG. 65.—Cleaning the north front of the Apadana. A double-bull capital in foreground had presumably fallen from a column of the northern portico.

iron spike, a bronze fibula, an iron lance point appropriately situated near the western guardroom, various pieces of plain and decorated sheet bronze once attached to doors or the like, small objects of gold, a bronze pulley wheel, and so forth.

FIG. 66.—Removing stones in the northern portico of the Hundred-Column Hall.

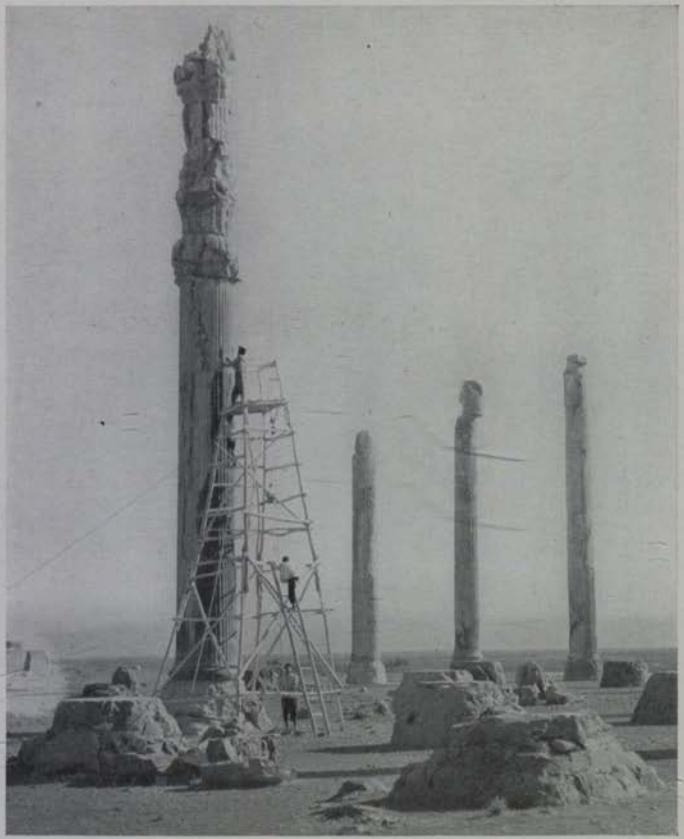


FIG. 67.—Repairing columns of the Apadana

FIG. 68.—Restoring antiquities in the Expedition House

THE NORTH FRONT OF THE APADANA OF DARIUS AND XERXES

Here again, as in the case of the Hundred-Column Hall, the excavation aimed at cleaning the north front of this impressive building (Fig. 5 *J*). We mentioned above that its construction was started by Darius, as proven by Herzfeld's and Krefter's discovery of two pairs of gold and silver foundation plaques, deposited by Darius in the northeastern and southeastern corners of the inner hall. The corresponding western foundation documents had disappeared long ago owing to the crumbling of the protecting walls.

The only significant discovery during the cleaning of the Apadana was a double-headed bull capital (Fig. 65) which had certainly fallen from one of the columns of the northern portico. It indicates the type of capital used in this particular section of the loftiest building of Persepolis.

RESTORATIONS

Persepolis requires a considerable effort to restore such structural parts as are restorable at all. Herzfeld and Krefter have made an excellent restoration of a large part of the palatial Harem of Xerxes, which had been superimposed on an earlier structure of Darius. Every excavation in or near the stone-built palaces brings to light heavy structural fragments which have to be replaced or, if not possible, lowered to the ground from the debris on which they are resting. Hans Kühler, a German mechanic, was in charge of this difficult work (cf. Fig. 66). The columns of the Apadana had weathered badly. The holes were filled, and the form was restored in cement (Fig. 67). Many fragments of the monumental stairways could be replaced and cemented in their original positions. The Expedition is even trying to preserve the mud-brick structures by capping them with a mud-and-straw layer and with baked bricks at the edges. The principal reliefs are temporarily protected by matting; but another system will have to be found to preserve them permanently. A typical scene showing specimen-restoring is illustrated in Figure 68. In the hands of these restorers the fragments of stone vessels shattered by Alexander's soldiers turn once more into the beautiful tableware of the Achaemenian kings.

SOUNDINGS NEAR PERSEPOLIS

NAQSH-I-RUSTAM (FIG. 69)

There is an unsurpassed dignity about the rock of Naqsh-i-Rustam ("Picture of Rustam"), where four cruciform cuts in the precipitous cliff mark the tombs of Darius the Great and his three successors and where that strange stone structure, the Kaʿbah-i-Zardusht ("Squarish [Tomb] of Zoroaster"), faces the cliff of the royal tombs.

Friedrich Sarre's and Ernst Herzfeld's *Iranische Felsreliefs* still stands as the most exhaustive description of the Achaemenian tombs and also of the numerous Sasanian reliefs carved into the foot of the rock and indicating that this cliff of tombs continued to play a significant role during the reigns of later rulers. The most important correction appears in Herzfeld's *Archaeological History of Iran* (London, 1935) p. 5, where he mentions that a relief of Bahram II was executed over an earlier Elamite scene dating not later than the second half of the 2d millennium B.C. Thus, long before Darius, this spur of the Husain Kuh ("Mountain of Husain") had been regarded with reverence.

Herzfeld's operations at Naqsh-i-Rustam consisted mainly in tracing the outer wall, with its rounded towers, inclosing the sacred precinct in front of the tombs; with the aid of a scaffold he copied and studied the inscriptions on the tomb of Darius. Our continuation of the work at this important site aimed at determining the remains inside the inclosure.

A T-shaped trench in front of Darius' tomb revealed an interesting stratification. Irregularities on the surface which appear well marked on the aerial map (Fig. 70) proved to be due to crudely built houses of a very early Islamic occupation (Fig. 71). They were dated in the first century after the Hegira by a stack of Sasanian silver coins with a Kufic inscription added. Patches of later Islamic times are also present. We illustrate a seal ring of bronze, inscribed in Kufic (Fig. 72), from the Islamic stratum. The underlying Sasanian deposit was

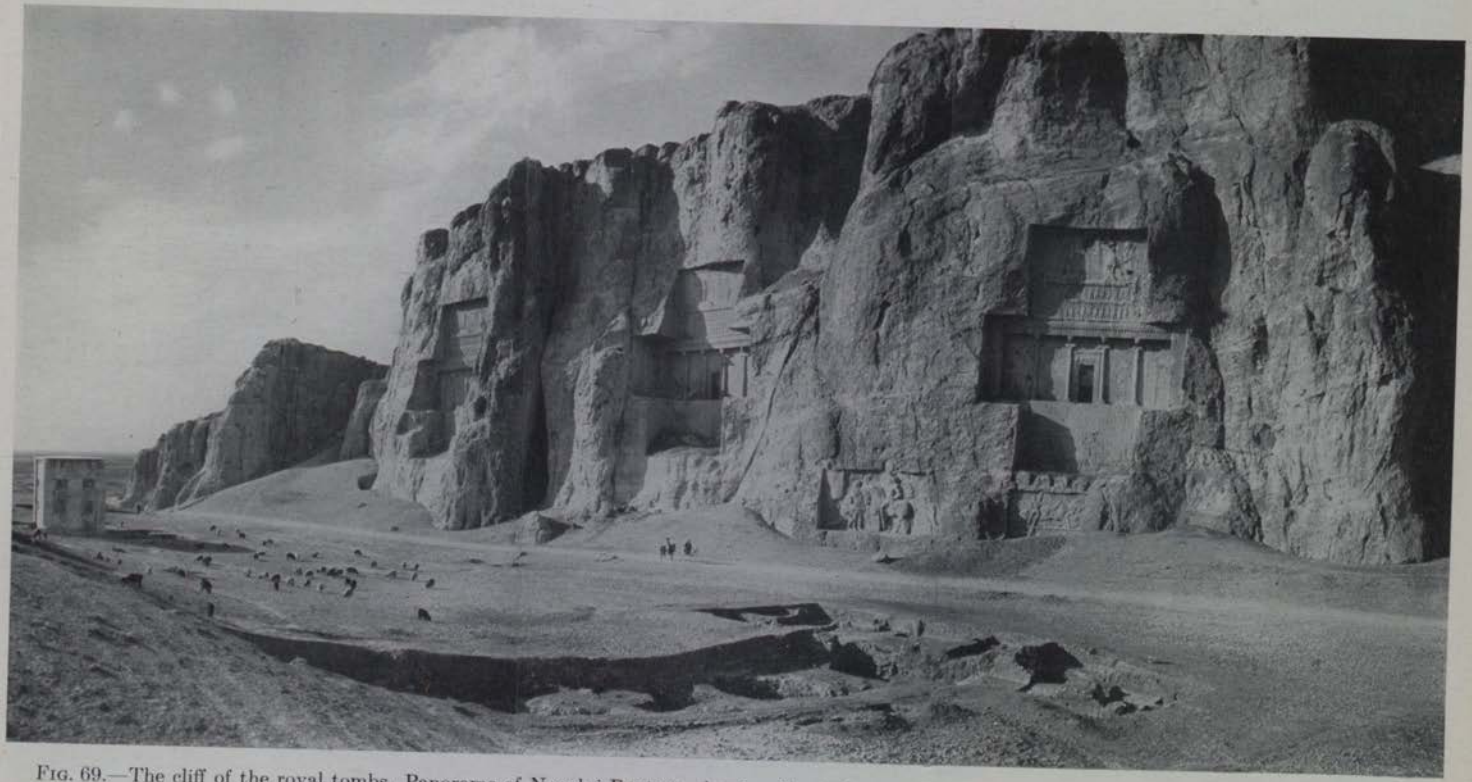


FIG. 69.—The cliff of the royal tombs. Panorama of Naqsh-i-Rustam, showing (beginning at right) the tombs of Darius I, Artaxerxes I, and Darius II, with excavations in the foreground and the Ka'bah-i-Zardusht at the extreme left. The tomb of Xerxes is to the right, outside the picture.

FIG. 70.—Naqsh-i-Rustam. Air map with grid corners marked in preparation for the excavations

defined by some coins and seals of that period. The walls of the third and lowest layer so far determined show distinct Achaemenian traits.

The most significant feature of the Early Islamic layer is the almost total absence of glazed ceramics. At Istakhr too we noticed the disappearance of glazed ware below the stratum of the Abbasid period (starting after A.D. 750). In the Sasanian palace areas of Tepe Hissar, near Damghan, and Chal Tarkhan, near Rayy, elaborately glazed sherds were intrusive and belonged to the time of the Abbasid caliph-

FIG. 71.—Naqsh-i-Rustam. Vertical air view during the excavations

ate. We believe therefore that Iran had no share in the development of the beautiful glazed ware which suddenly appears in great quantities after the fall of the Umayyad caliphate. The question, to what extent the Persian potters learned to imitate the finest products of their Mesopotamian and perhaps equally or more advanced Egyptian brother-craftsmen, has yet to be settled.

The Sasanian layer of Naqsh-i-Rustam is illustrated by two finds (Fig. 72). The carnelian seal has the characteristic form of a three-quarter globe, with a griffon and a Pahlavi inscription as sealing pattern. The attractive bronze lamp occurred in mixed Islamic and Sasanian debris; but we attribute it to the Sasanian period.

NR 8 NR 17

NR 25

FIG. 72.—Samples of finds from Naqsh-i-Rustam: an Islamic seal ring of bronze with Kufic inscription, a Sasanian carnelian seal with Pahlavi inscription, and a Sasanian bronze lamp. Seals, 2:1; lamp, 1:1.

The Achaemenian stratum, for us the most important layer in the sacred precinct, is deeply buried below the two succeeding occupations and below masses of stone flakes chipped off the face of the cliff by the sculptors of the Sasanian reliefs. These flakes may also represent in part debris from the Achaemenian tomb cuts thrown back from the foot of the rock by the Sasanians. Walls alone define the Achaemenian stratum; for a column base of Xerxes type and a stone slab with some Old Persian cuneiform characters were found in later debris, the inscribed slab actually on the surface.

The Achaemenian walls uncovered in the central sounding show the same mud-brick measurements (33 × 33 × 13 cm.) as those found on the Persepolis Terrace. They are also faced with the same grayish green plaster coat. Needless to say, it will be the first task of further work at this site to uncover the building once constructed in front of Darius' tomb.

The second sounding was intended to free the environs of the "Kaᶜbah of Zoroaster," so as to determine its origin and to date such structural remains as might possibly be associated with its base level. This test brought to light a Sasanian inscription of outstanding importance. It is cut into the eastern surface of the Kaᶜbah at about a man's height above its base. Under the title, "A new Pahlavi inscription," Professor Martin Sprengling of the Oriental Institute published a preliminary transliteration and commentary in *AJSL* LIII (1937) 126–44. We illustrate the find-spot of the inscription in Figure 73. Sprengling believes (*op. cit.* p. 140) that the inscription proves that the "Kaᶜbah of Zoroaster" is no burial place but the shrine for the Anahit fire of Istakhr, the shrine where the Sasanian kings were crowned and where the crown jewels may have been kept. He also suggests that the relief of the investiture of Narseh (cut into the cliff opposite the Kaᶜbah), who ascended the Sasanian throne in A.D. 293 or 294, may have bearing on the inscription, which apparently deals with an enthronement ceremony.[1]

Let us assume that Sprengling is right in identifying this building with the Anahit shrine of Istakhr—an opinion previously and very

[1] In a further article, in *ZDMG* XCI (1937) 652–72, Sprengling still holds the idea that our inscription has reference to the Narseh investiture (p. 654), and he is still inclined to consider the Kaᶜbah the shrine for the Anahit fire (p. 662).

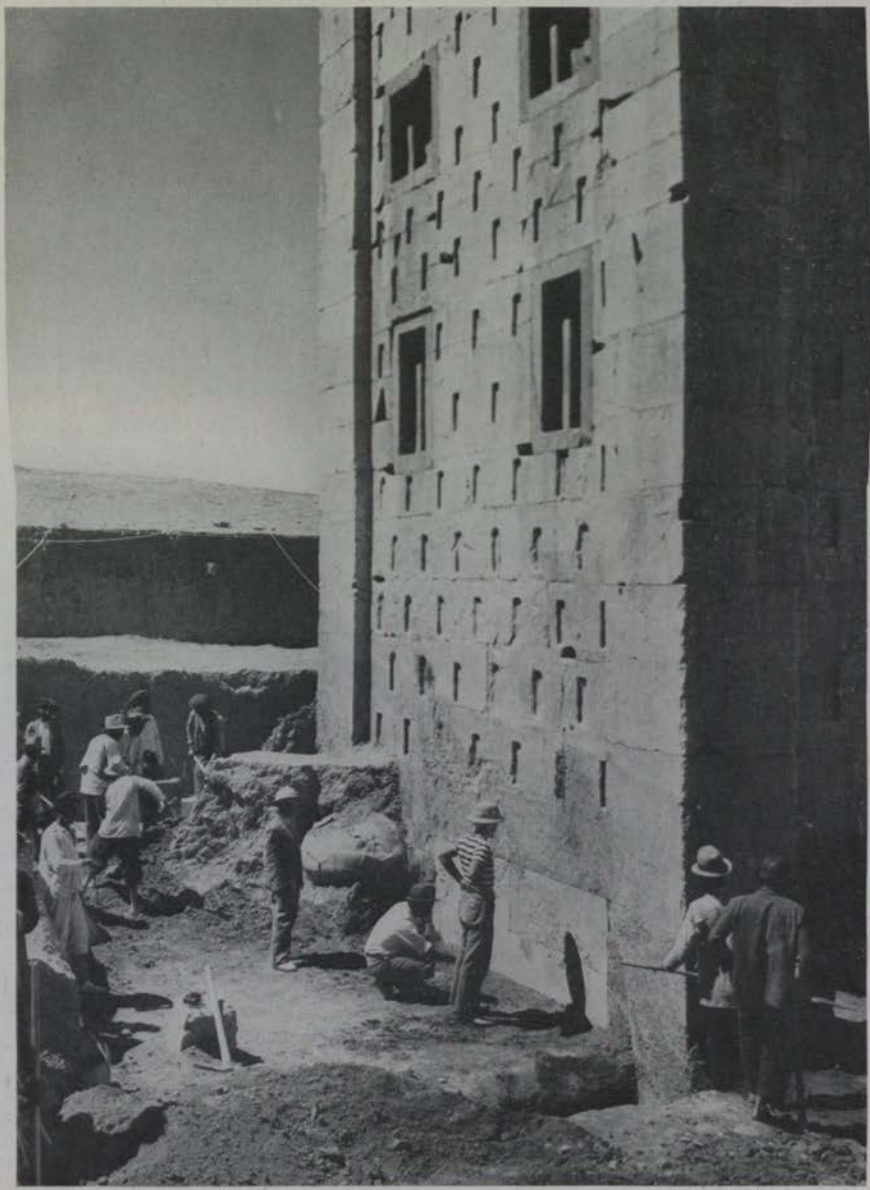


FIG. 73.—The east wall of the Ka'bah-i-Zardusht at Naqsh-i-Rustam with a newly discovered Pahlavi inscription.

definitely held by Sarre.[2] Let us also admit that the standard of the Sasanian Empire may have been kept here and that this focus of many controversies held the crown jewels as well. All this does not yet necessarily contradict Herzfeld's plausible identification of the Kaʿbah as primarily a very early Achaemenian type of structure, perhaps a tomb, paralleled by a building at Pasargadae.[3] Personally, we reserve our judgment until the environs of this building are entirely excavated, until the relation of its base to the stratification of Naqsh-i-Rustam is defined, and until the interiors of similar, though smaller, mud-brick cubicles partly uncovered by Herzfeld outside the southwest corner of the sacred precinct have been examined.

ISTAKHR

HISTORICAL SKETCH[4]

A few painted sherds found during the tests suggest that a small patch of the extensive town area was settled as early as the fourth millennium B.C. There is also a possibility that an Elamite settlement of the second millennium B.C. or earlier existed somewhere within the area of Istakhr or Naqsh-i-Rustam, as suggested by the Elamite relief (cf. p. 98) on the cliff of the royal tombs.

It has been assumed that Istakhr (from *stakhra*, "strong") was the town of the commoners during the time of Achaemenian Persepolis; but we may say parenthetically that the excavations have failed so far to identify an Achaemenian town deposit. While Persepolis is last mentioned historically at the end of the 4th century B.C., Istakhr appears in the Seleucid period as the provincial capital and as a mint town, which it continued to be until the end of the period of the Abbasid caliphate in Iran.

During the Arsacid period the sacred fire continued to burn in the temple of Anahit, in or near Istakhr; and one of its priests, perhaps the chief priest, was Sasan, father of Papak and grandfather of Ardeshir I.

[2] *IF*, p. 4, n. 1. [3] *IF*, pp. 3–5 and 152–54.

[4] For Istakhr bibliography see M. Streck in *Encyclopedia of Islam* II (Leyden and London, 1927) 556–60. We have consulted Sarre and Herzfeld, *Iranische Felsreliefs;* Guy Le Strange, *The Lands of the Eastern Caliphate* (Cambridge, Eng., 1905); G. N. Curzon, *Persia and the Persian Question* (London and New York, 1892); A. V. W. Jackson, *Persia Past and Present* (New York and London, 1906); G. Rawlinson, *The Five Great Monarchies*, Vol. III; and others.

The latter founded the Sasanian Empire through his victory over the Parthians in 226 or 227 B.C. Although Ardeshir built a new capital near present Firuzabad and although Ctesiphon became the administrative center of the Sasanian Empire, Istakhr remained the traditional home of the dynasty, and the time of its greatest prominence (though not necessarily extent) falls in this period.

It played the same role under the Sasanians which Persepolis had played under the Achaemenians, when Susa, Babylon, and Ecbatana were more important administrative centers. Beside the sacred fire in or near Istakhr the standard of the Empire and the crown jewels may have been kept (cf. p. 103). Near Istakhr, Sarre suggests, the Sasanian monarchs may have been crowned in a gap of the rock called Naqsh-i-Rajab, where the first two Sasanian rulers are pictured on three reliefs. The significance of Naqsh-i-Rustam, 2.5 kilometers west of Istakhr, in relation to the Sasanians is emphasized through their reliefs and the newly discovered inscription mentioned on page 103.

In A.D. 640 Istakhr repulsed the first onslaught of the Arabs; but it had to capitulate in 643. Subsequently its citizens rebelled against the Arab governor and killed him. But in 648 or 649 the town was taken again, and many inhabitants perished on this occasion. Its rival, Shiraz, was founded in 684[5] and eventually displaced Istakhr as capital of the province of Fars. In the 10th century Istakhr is mentioned as a modest town. But, according to Muslim historians, its main mosque, with columns and bovine capitals, supposedly an ancient fire temple, was still standing in the bazaars. At present one solitary column with a double-bull capital is preserved on the mound of Istakhr. It is one of the columns of this pre-Islamic structure which had been reused as the main mosque of the Islamic city.

Istakhr was finally destroyed by a punitive expedition of Samsam al-Daulah toward the end of the 10th century after Christ. In the 12th century the former capital of the Sasanians had been reduced to a village of about a hundred inhabitants. The statement of Hamd Allah referring to a big 14th-century town of Istakhr[6] is false, according to

[5] Walter Hauser suggests that Kasr-i-Abu Nasr may have been Sasanian Shiraz; see New York. Metropolitan Museum of Art, *Bulletin* XXIX (1934) December Sec. II, pp. 13 f.

[6] Curzon, *op. cit.* II 134.

archeological evidence. At present the only occupant of the once flourishing site is a crumbling village fort with a fluctuating population of a dozen people.

THE MOUND

The irregular oval core of the site is illustrated by a drafted map (Fig. 74) and an aerial map view (Fig. 96). The town area is inclosed by a well defined fortification with rounded towers, one of which (in quadrant IM) was excavated by Herzfeld. The circumvallation is Sasanian; but it defines also the limits of the Islamic city proper, though its suburbs spread beyond the city wall. Mainly within this area we have to look for the successive strata of the site, while tests may define the character of the lesser ruin formations in the neighborhood. In this respect a flat fortress mound east of the town and separated from it by a distinct moat channel will deserve particular attention.

The walled-in core of Istakhr covers an area 1,400 meters from east to west by 650 meters from south to north. Its highest point is a section of the inclosure on the southwest; it rises 16 meters above the mound base. The average height of the site appears to be about 10 meters. However, the actual depth of the ruin deposit is generally far less, since the town spreads over rolling ground elevated by nature above the immediate environs. A moat, possibly with a gap on the southeast, seems to have inclosed the town. It was filled with the water of the Pulvar River, now flowing solely along the northern edge. Most of the gently rolling mound surface is characterless; that is, there are no indications of particular structures, with the exception of the column and some other architectural fragments of the mosque mentioned above. Two other spots, sounded by Herzfeld, also appear to have shown surface indications of similar character.

THE TESTS

Figure 74 shows in what manner our tests were distributed over the site. During the first season (1935) a cut 20 meters square sounded the center of the town deposit, and the western part of the mound was examined in similar fashion. Subsequently the vicinity of the mosque in the southern section of the town was investigated, and further cuts, guided by the aerial analysis of the mound surface (see pp. 133–36), sounded the western half of the site.

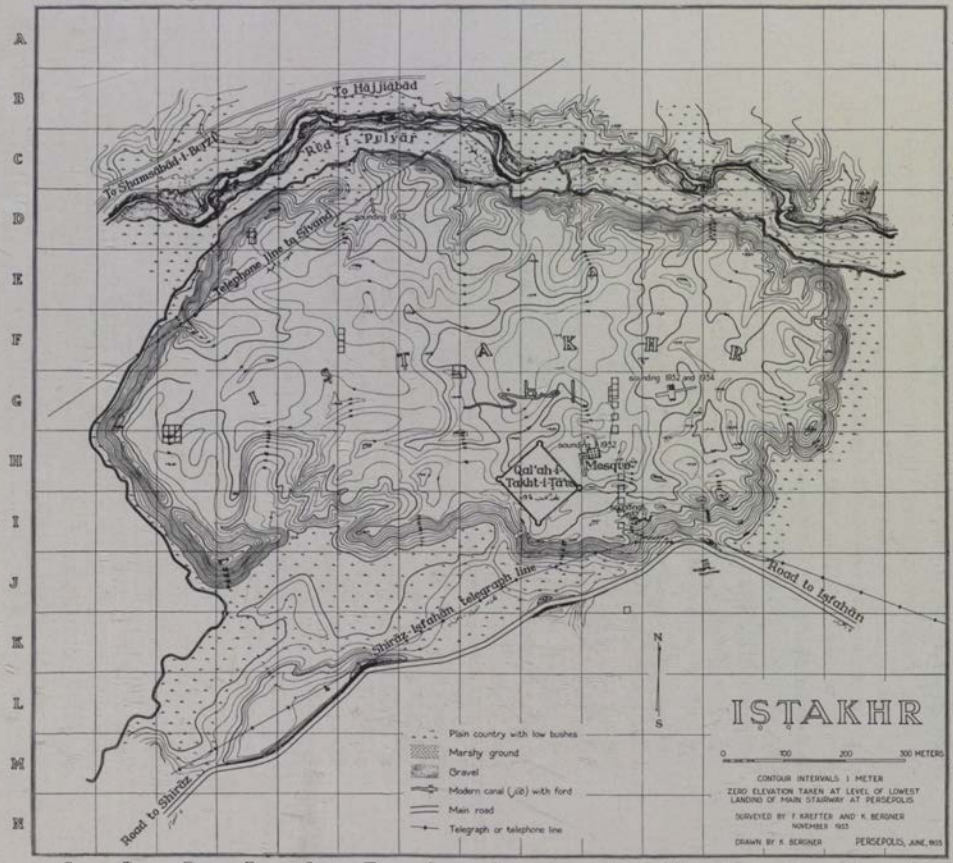


Fig. 74.—Plan of Istakhr, showing the areas tested (cf. Fig. 96). Scale, 1:10,000

The intensive description of our work at Istakhr will require a separate publication. We may mention at once that by far the greater volume of our material belongs to the Early Islamic period, which accumulated a very thick stratum. It may also be added that at many spots the Islamic city rests directly on virgin soil. It appears that the last occupation of Istakhr was more extensive and more compact than the preceding towns. It remains to be seen whether the eastern-

FIG. 75.—Excavating a building of Abbasid Istakhr

most quarters of the settlement will change the impression which we gained in the central section. In the principal western test (quadrants GE and HE) we struck the Sasanian stratum near the surface below sporadic remnants of the Islamic occupation. As to pre-Sasanian remains met with during our soundings, there are only a few coins of Persis of the Arsacid period, a sculptured stone object (see pp. 119–21), and a few "rosette stones"[7] of Persepolis type reused in Islamic buildings. At those points which we investigated no pre-Sasanian town remains occurred.

[7] Stones incised with a rosette on one side.

THE ISLAMIC CITY

Istakhri wrote in A.D. 951 that the houses of his native town were built of clay, stone, and gypsum, according to the wealth of the owner.

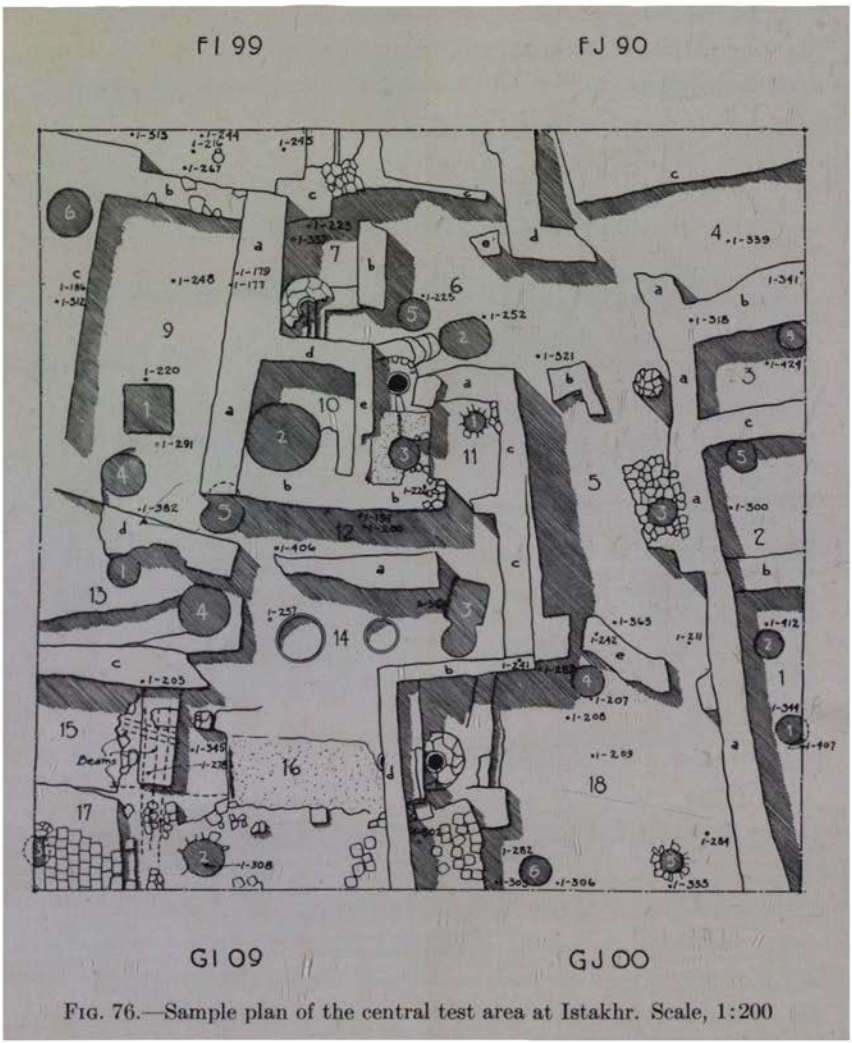


FIG. 76.—Sample plan of the central test area at Istakhr. Scale, 1:200

That means that the poor lived in mud-brick houses, but the buildings of the wealthy had stone foundations and were presumably

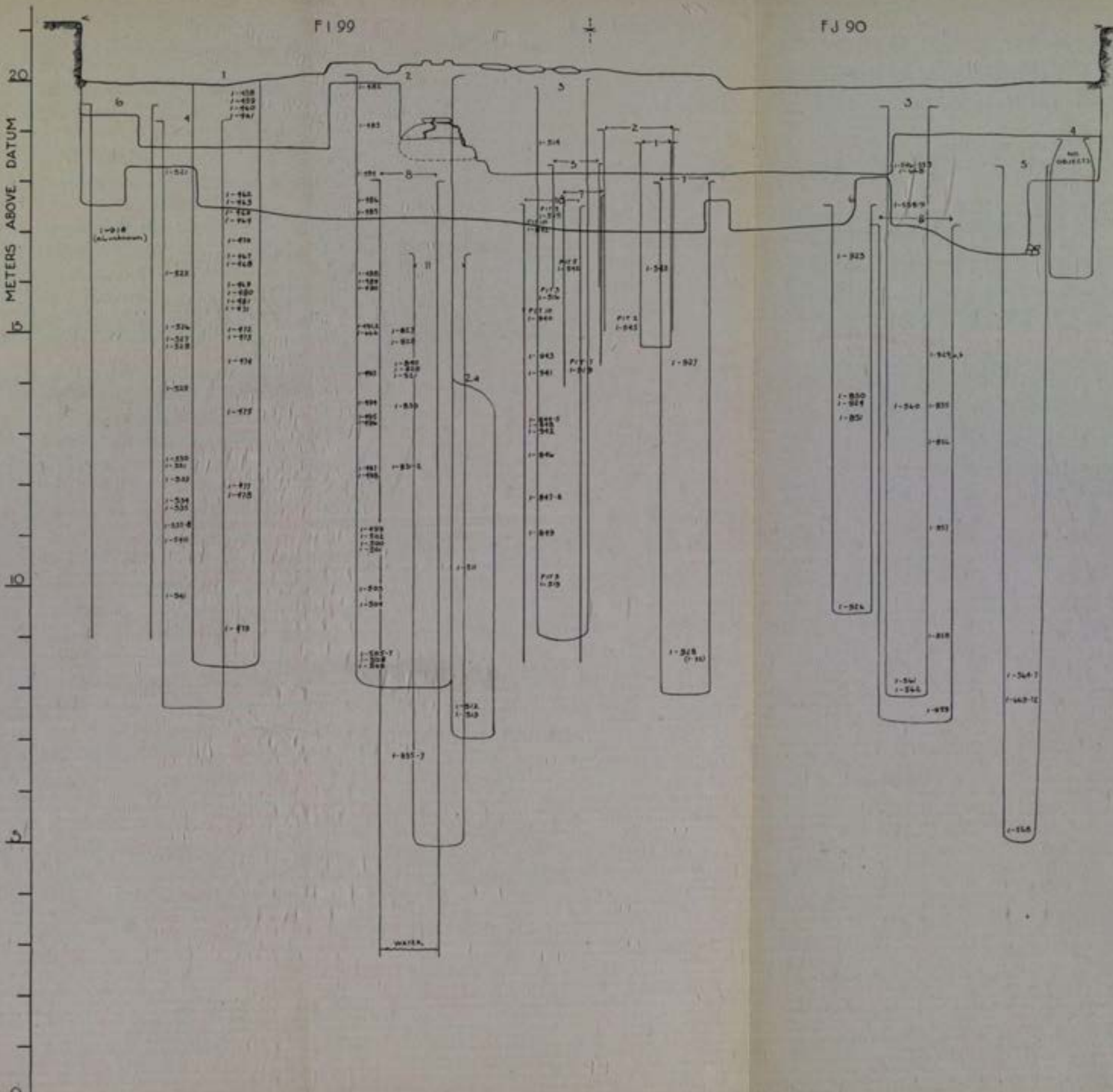


Fig. 77.—Sample cross-section of the central test area at Istakhr. Scale, 1:100

decorated with stuccoes such as were found by Sarre and Herzfeld in Samarra.[8]

Our tests penetrated an intricate entanglement of walls of clay, often resting on foundations of boulders; but the houses of the wealthy and the governmental buildings are still to be found. One test expanded to uncover a rather complete building (Fig. 75) with rooms grouped around a central courtyard which in its turn inclosed a small basin. In most other cases the weak and fragmentary structures did not warrant expansion of the dig. Besides that, the principal aim of our tests at Istakhr was the determination of its stratigraphy. We implied above that we are not yet satisfied with the results. The Istakhr mound has a considerable size, and its stratigraphy may show very curious sequences in the various sections of the final area of ruins. One quarter of the Islamic town may be superimposed on a prehistoric settlement, while other sections may rest on a deposit of any one of the preceding historic epochs.

Excavations in Islamic deposits are intricate, as we well knew from our experiences at Rayy. The "methodological key" at Istakhr, as at Rayy, is the trash pit. The entire site is perforated by the cylindrical, rarely rectangular or piriform, holes of pits for refuse, sewage, or storage and by wellholes of the Islamic town, greatly disturbing of course the deposits of earlier times, where they exist. But for Islamic archeology these pits are extremely valuable. The holes are often "locked" by caps of brick or stone and therefore preserve an approximately contemporaneous mixture of broken and here discarded pots, coins lost with the sweepings, and at times an astonishing array of other things, including personal ornaments of value. As a sample for one of our test squares we illustrate a plan and a cross section (Figs. 76–77) showing the pits extending for many meters through the mound and into the virgin soil below.

CERAMICS

Out of hundreds of vessels a few samples only can here be shown. When the work of classifying and comparing is complete Istakhr will

[8] See Herzfeld, *Der Wandschmuck der Bauten von Samarra und seine Ornamentik* (Berlin, 1923).

take its place with Samarra, Fustat,[9] and Rayy as an important center of our knowledge in regard to the ceramics of the Early Islamic period.

Vast numbers of unglazed vessels and sherds appeared in the pits and houses of the last town, in addition to beautifully glazed pots and fragments. Leaving vessels without any decoration for a final report, we show here two samples of molded ware, extremely frequent in the

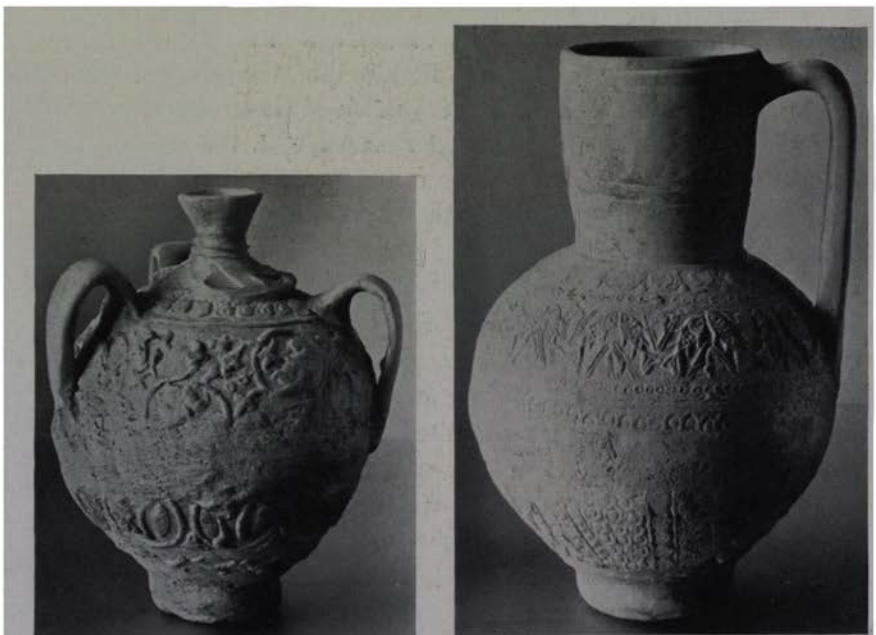
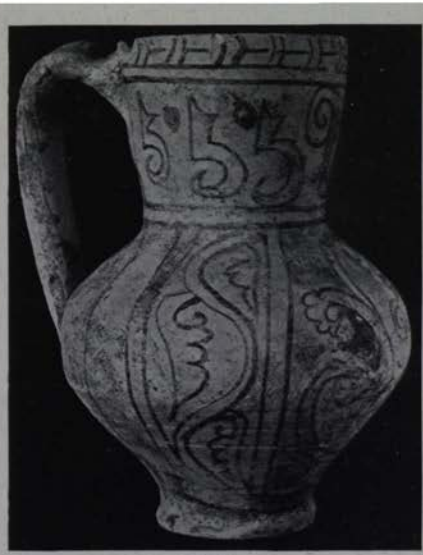


FIG. 78.—Molded Islamic ware from Istakhr. Scale, 1:3

Islamic stratum (Fig. 78). The upper and lower halves of such pitchers were always separately molded, and often the two halves show the same pattern. The pots illustrated were each modeled in two forms, the main pattern appearing on the upper body. A floral band encircles one vessel, while an attractive fish design decorates the second. Geometrical designs, often in allover repeated units, prevail, however. In this fashion the lower body of the pitcher with fish design is decorated. The paste and the surface of both vessels are light greenish brown.

[9] Cf. A. J. Butler, *Islamic Pottery* (London, 1926).

Quite a few painted pots occurred in the Islamic stratum of Istakhr. Pitcher I2 695 (Fig. 79) illustrates this little known ware. The design, floral in part, is painted in gray on the yellowish brown slip, with traces of red-brown pigment filling the large dots on the neck and parts of the vertical bands which separate the floral units. The paste is buff and fine. Bright red pigment also occurs in the designs of such vessels.



I2 695

FIG. 79.—Painted Islamic pitcher from Istakhr. Scale, 1:2

The famous lusterware with metallic luster is also found at Istakhr. Our work is not far enough advanced to take a stand in the controversy for or against Persian manufacture of this pottery in general. Compared with other types of glazed ware, luster ceramics are rare; but we have sounded a minimal patch only of the extensive site. The saucer I2 929 (Fig. 80), coated with monochrome yellow glaze with golden luster, belongs to class V B of Samarra ceramics as described by Sarre.[10] The paste is dark yellowish brown and fine. There are only a few fragments of this particular ware in our collection; it seems

[10] *Die Keramik von Samarra* (Berlin, 1925) pp. 32–35, Texttafel C 2 and 4–6, and Tafel XI.

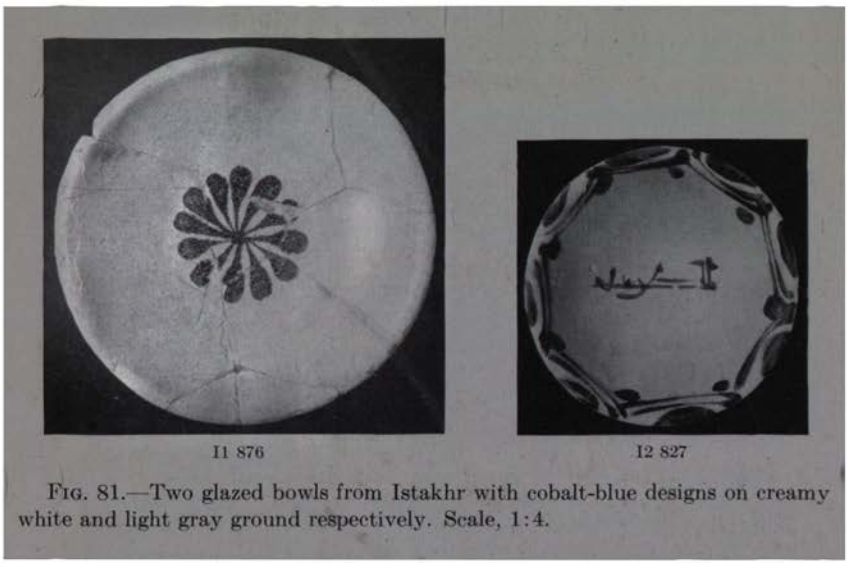
I2 929

I1 736

FIG. 80.—Islamic saucer with golden luster and luster bowl in dark brown, yellowish green, and light gray, both restored, from Istakhr. Scale, 1:3.

therefore that it was imported, presumably from Mesopotamia. The glaze, partly abraded, is applied over a delicate relief of overlapping circles and floral units.

The fine luster bowl I1 736 illustrated in the same figure has an unusual off-center pattern in dark brown, while the rest of the interior is filled with units in yellowish green luster over a light gray to light grayish brown glaze coat which has yellow streaks on the exterior. The paste is yellow and fine, hardly to be distinguished from the



I1 876 I2 827

FIG. 81.—Two glazed bowls from Istakhr with cobalt-blue designs on creamy white and light gray ground respectively. Scale, 1:4.

"Samarra paste." There are quite a number of sherds of this attractive lusterware, some with polychrome luster, closely resembling certain Samarra pottery described in Sarre's volume.

Another type of ceramics well known from Samarra and also occurring at all those major sites which were occupied during the Abbasid caliphate is illustrated in Figure 81. In one case a cobalt-blue rosette appears on creamy white ground; the other bowl is decorated with a highly conventionalized Kufic inscription and a rim ornament in cobalt on a light gray, finely speckled, allover glaze. The paste is yellow and fine in both cases, identical with the body of the lustered pottery.

The characteristic Istakhr ware of the Islamic period seems to be

greatly influenced by Eastern Asiatic ceramics. It has running monochrome or polychrome designs or simply continuous patches of glaze over delicately incised, usually floral, patterns. The sample here

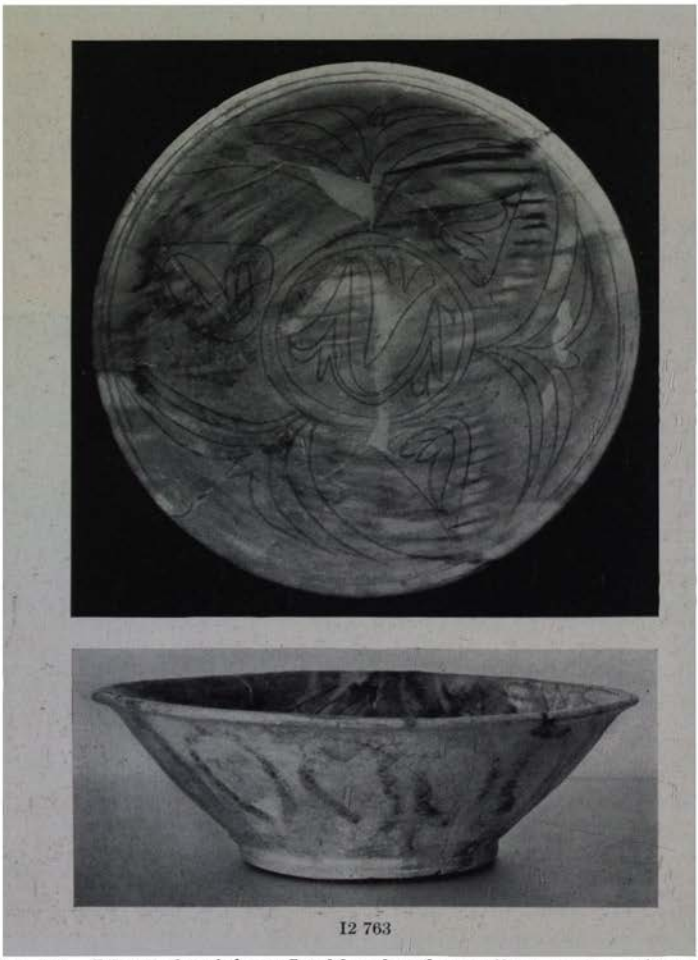


FIG. 82.—Islamic bowl from Istakhr glazed in yellow, green, aubergine, and grayish white. Scale, 1:4.

shown (Fig. 82) is covered on the interior with streaks in yellow, green, and aubergine, leaving only a few spots of the grayish white glaze coat. The polychrome design is applied over an incised floral pattern. While the interior is highly glossy, with fine crackling, the exterior

coat is mat and white and covers the entire base also. A pattern of roughly drawn glossy green loops is applied on this exterior coat. Double firing is indicated by tripod marks on both interior and ex-

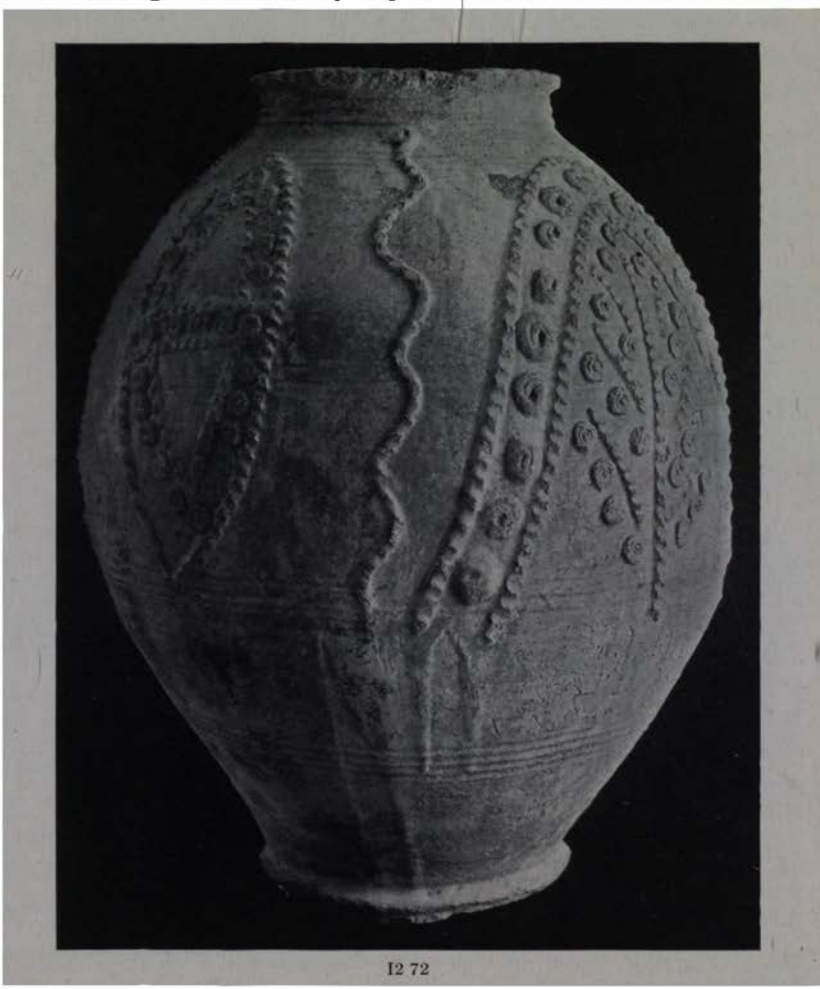


FIG. 83.—Green-glazed Abbasid jar from Istakhr with applied pattern of snakes etc. Scale, 1:6.

terior. At times such double markings are due to stacking of bowls; but at Rayy too we noticed double firing on vessels of the Early Islamic period, while those of the Middle Islamic phase were only fired

upright, as a rule. On the vessel under consideration the interior polychrome design was fired upside down, as indicated by drops on the lip. The paste is buff-colored and fine.

We illustrate, finally, a storage vessel (Fig. 83) with applied designs of snakes, a tree, large ellipses, and so forth, covered by a partly glossy green glaze with fine crackling and patches of white patina.

FIG. 84.—Islamic tripod vessel of bronze with suspension handles, from Istakhr. Scale, 1:2.

These samples give only a rough idea of the ceramic wealth of Muslim Istakhr, which includes also fragments of imported Chinese T'ang ware.

OTHER FINDS

Attractive stone and bronze objects, such as elaborate lamps, small vessels (e.g. Fig. 84) and other utensils of daily life, appeared in the debris and in the trash pits of the latest town. There are also many vessels and other objects of beautifully iridescent glass. Personal orna-

ments are represented in many materials from clay to gold. Clay figurines are quite frequent. We illustrate a camel with riding saddle

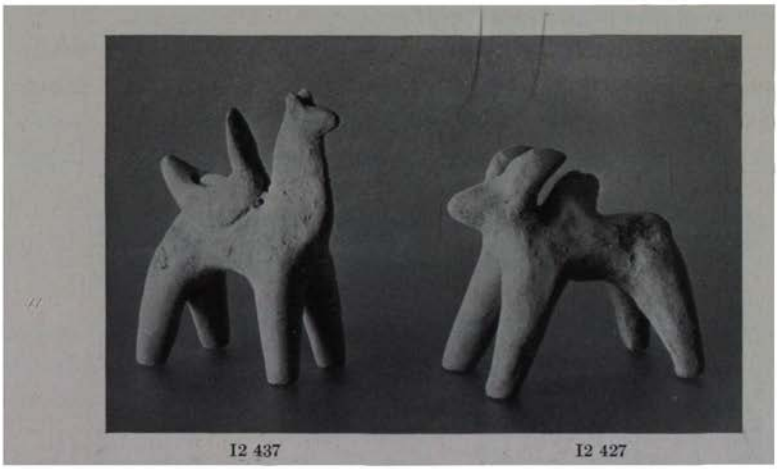


FIG. 85.—Islamic figurines from Istakhr: a saddled camel and a horned animal. Scale, 1:3.

and a horned animal, perhaps an ibex (Fig. 85). That there was no strict prohibition against the modeling of the human figure is indicated, among other things, by a little bone figurine (Fig. 86). The ears are perforated for pendants; and the hands are sticking in the sleeves, as is still required in Iran as a sign of respectful attitude.

Great numbers of coins in copper and silver, and a few gold coins, minted at Istakhr and in other towns, will be invaluable for defining delicate subdivisions of the Islamic stratum.

FIG. 86.—Islamic figurine of bone, perhaps a doll, from Istakhr. Actual size.

PRE-ISLAMIC FINDS

In plot GI 09 of the central test, in refuse of mixed Islamic and pre-Islamic, presumably Sasanian, debris the interesting sculpture was found which is illustrated in Figure 87. Two identical genii and lions are carved out of one piece of limestone with dark cream-colored surface. The

core from which these figures protrude is a miniature column with base smooth and flat except for a minute depression in the center. The edges at the bottom and at the top are fractured, and the top surface is somewhat rough. The exact purpose of this object is unknown. It seems to have been a leg or a stand for some device.

The head of each genius, face battered, is inclosed in a sort of cowl. The chest is covered by a breastplate from which the upcurved wings

I1 731

FIG. 87.—An Istakhr sculpture of the Sasanian period or earlier: two winged genii and two lions. Scale, 1:2.

seem to extend, the two pairs touching near the tips. The left hand holds a staff or a sword(?). The right arm is broken in both cases; a stump on the right hip indicates where it touched the body. The garment of the upper body is solely shown by slit, tight-fitting sleeves indented above the elbows. This garment continues perhaps in the kiltlike skirt extending in folds from the hip to the knees. A folded scarf encircles the waist. The feet are badly modeled, and the legs are in both cases mutilated.

The lion stands with his foreleg (only one shown) on the bent right leg of the genius. Neither the mane nor the fur of the body is indicated; but the appearance is rather feline, justifying the identifica-

tion. A canine might be the alternative. The head is turned back, showing the teeth and one ear. The tail switches over the right flank.

According to the find circumstances this object should be attributed to the Sasanian period. Needless to say, however, it may have been reused. Professor Herzfeld suggests a considerably earlier origin.

Coins of the Sasanians are quite frequent, but as to earlier times the numismatic catalog prepared for the Expedition by George C. Miles mentions only coins of the first centuries of our era.

The Sasanian pottery obtained in the western half of the mound is rather simple, purely utilitarian. Continuation of work in the Sasanian town should provide enough information to determine those features surviving in the ceramics of the Islamic epoch. Some glass and a few figurines and seal stones are the only other pre-Islamic finds worth mentioning at present.

TALL-I-BAKUN

Two kilometers south of the Terrace of Persepolis Herzfeld discovered a prehistoric mound with beautifully painted sherds on the surface. The results of his test trenches, made in 1928, he published in *Iranische Denkmäler* I A (Berlin, 1932). Later, Herzfeld and Langsdorff continued the excavation of this hill under the auspices of the Oriental Institute of Chicago. A hole in the neighboring twin mound suggests another sounding.

The air map (Fig. 88) shows the 10×10-meter plots in which we continued the tests of the mound (Tall-i-Bakun A) examined previously. Four plots in one square also sounded the second hill (Tall-i-Bakun B), but here we penetrated in only one plot to virgin soil.

We have as yet nothing to add to Herzfeld's presentation of the painted ceramics in his above mentioned publication. The results of the Oriental Institute's first excavation in Tall-i-Bakun A are in press. In this preliminary report we present only a brief sketch of our later work.

We attribute to the Age of Copper, and specifically, in terms of northern Iranian chronology, to Hissar IA and B,[11] the entire material presented by Herzfeld and considered neolithic in the publication cited. In the very bottom deposit of Tall-i-Bakun A we found copper

[11] Cf. Schmidt, *Excavations at Tepe Hissar, Damghan.*

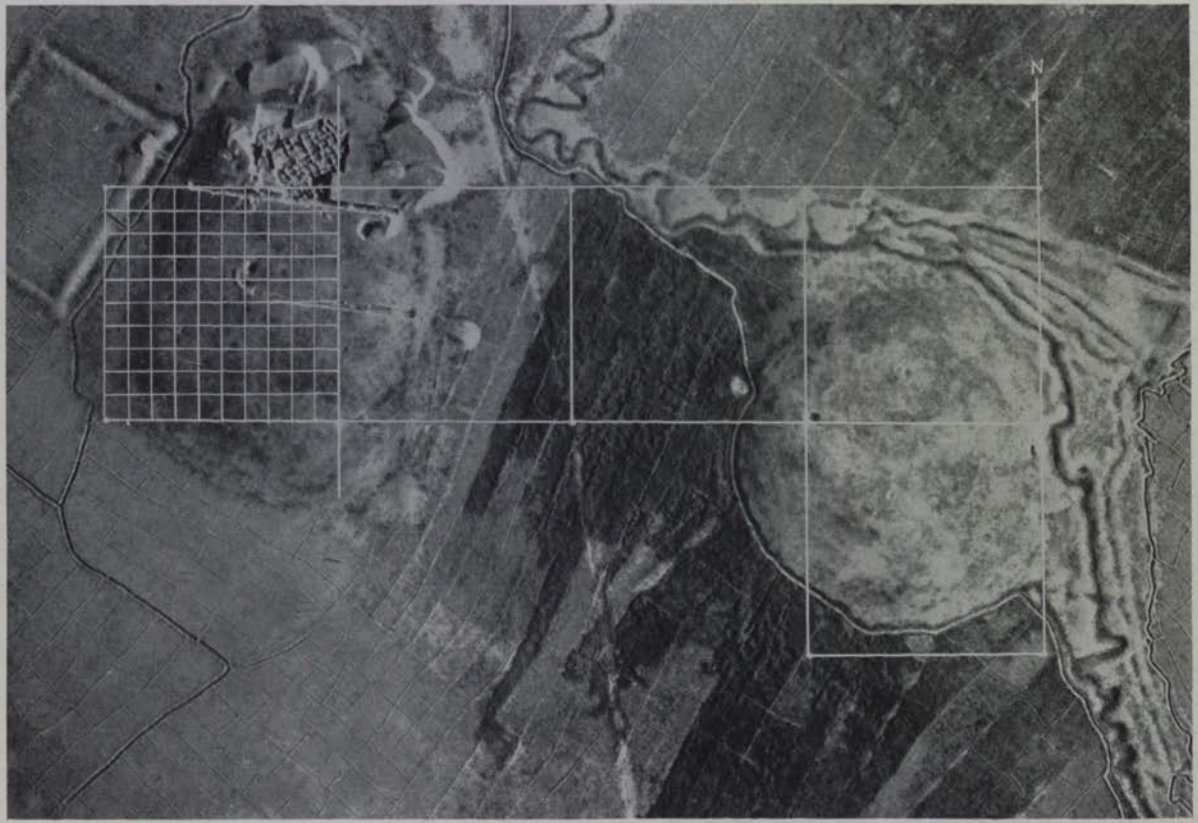


FIG. 88.—Air map of prehistoric Tall-i-Bakun A (partly excavated) and B, with survey grid. Scale, 1:3,000. As to the technique of aerial mound-mapping see pages 133–36.

objects, such as the points and the needle illustrated in Figure 92. A button seal of copper (TBA 361 in Fig. 93) was found in a room of the lowest occupational level; its form is identical with that of stone seals frequent in the same stratum. The dagger TBA 288 (Fig. 92) occurred directly below the floor of the upper prehistoric level in refuse of mixed red ware and painted sherds. In this respect we may mention that the entire top stratum of this mound accumulated

FIG. 89.—The second prehistoric level (counting from the top) in the central test area of Tall-i-Bakun A, showing a house of sun-dried brick.

during a period of plain red pottery, superimposed on a thick deposit of painted ceramics. We may be able to subdivide the lower stratum into two phases after the numerous vessels and sherds are worked up. Attractive button seals (Fig. 93) and figurines (Fig. 94), including human heads of al-ʿUbaid type, occurred in the stratum of painted pottery, in addition to many flint objects, whorls, beads, and implements of stone and baked clay.

Except for a top layer with some painted sherds, Tall-i-Bakun B, the neighboring mound, has the earmarks of a neolithic site. Here metal is entirely absent. The volume of remains of the material cul-

ture is poor. There are only knives, scrapers, and other tools of flint and obsidian. The pottery is coarse brown ware. Some cup-shaped spindle whorls of clay occur; but the most characteristic finds at this spot are masses of bone points and awls. In spite of a well trained labor crew we were not able to define the contours of any buildings, though occupational levels, that is, hard-tramped floors, could be determined. Again we have to consider the small extent of the area examined.

TBA 569

FIG. 90.—A painted bowl from Tall-i-Bakun A with brown ibex pattern on yellowish brown surface. Scale, 1:3.

In addition to the air view (Fig. 88) showing the size and the topography of the two mounds, we illustrate an excavation scene in the second prehistoric level (counting from the top) of Tall-i-Bakun A (Fig. 89). It is the uppermost sublevel of the stratum of painted pottery, uncovered in the central test. Part of a mud-brick building extends into the excavation, while the rest is an open courtyard. Haines, the expedition architect, was able to determine some dimensions of the large straw-tempered bricks; one of them measures 67×26×10 cm. Two more sublevels appeared below this building, the lowermost giving us the plans of pottery kilns.

We show two samples of the painted pottery of Tall-i-Bakun A.

Bowl TBA 569 (Fig. 90) distinctly shows the markings of a vessel turned by hand on the slow wheel. Its paste is light yellowish brown, fine and medium soft. Over the light yellowish brown surface the design is painted in brown. Three highly conventionalized ibexes with small triangular body and huge dentate horns decorate the vessel.

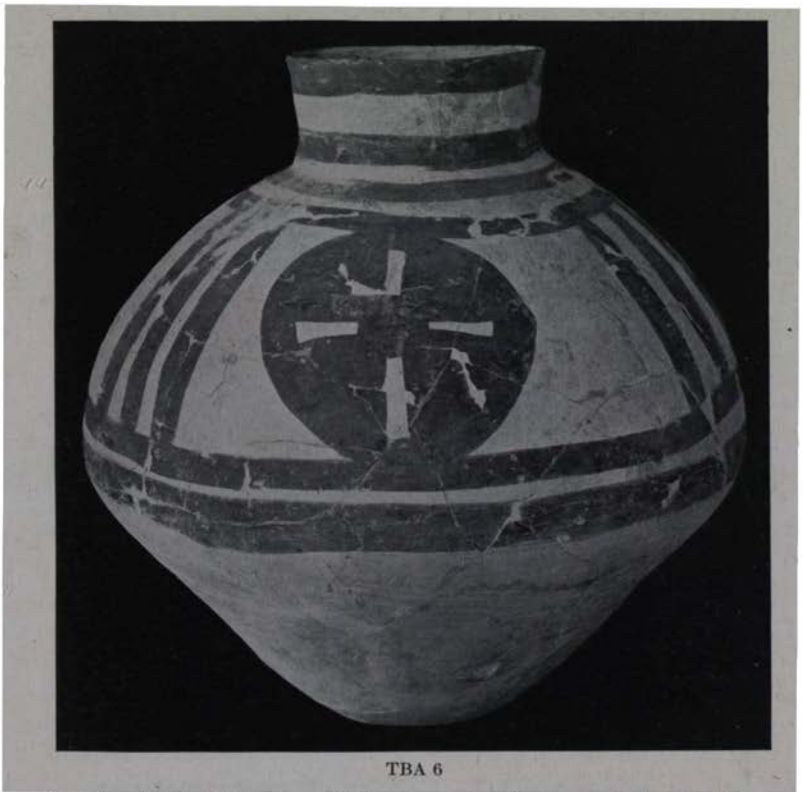


FIG. 91.—A painted jar from Tall-i-Bakun A with brown design on light greenish gray-brown surface. Scale, 1:5.

Each pair of horns curves around a crosshatched circle, perhaps a sun symbol, after the fashion of the ibex patterns on the pottery of Hissar IB and C. Paired rows of dots form fill designs which may actually represent the tracks of the ibexes. Jar TBA 6 (Fig. 91), with light greenish gray-brown surface and fine soft paste of the same color, is decorated with three brown circles, two quartered and one halved by reserved lines.

The find conditions of the copper objects—a dagger, two points, and a needle—illustrated in Figure 92 have been mentioned above. There can hardly be a doubt that their metal is mainly pure copper; but

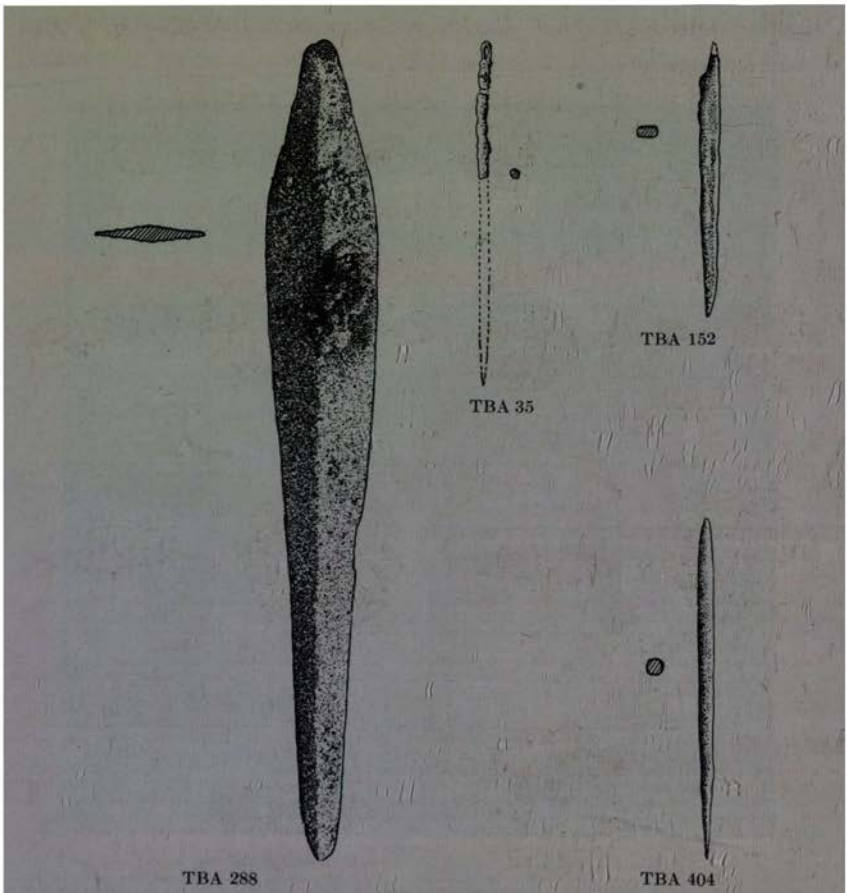


FIG. 92.—Prehistoric copper objects from Tall-i-Bakun A: a dagger, a needle, and two points. Scale, 1:2.

subsequent analyses will have to show to what extent it is naturally alloyed with traces of other metals. In connection with Tepe Hissar we have mentioned that points such as here illustrated may have been used as weapon heads.[12] It is strange that typically shaped arrowheads

[12] Schmidt, *Excavations at Tepe Hissar, Damghan*, p. 57.

of stone occurred neither at Tall-i-Bakun nor in Stratum I of Tepe Hissar.

Of button seals (Fig. 93) we show some samples from the stratum of painted pottery at Tall-i-Bakun A; no seals were found in Tall-i-

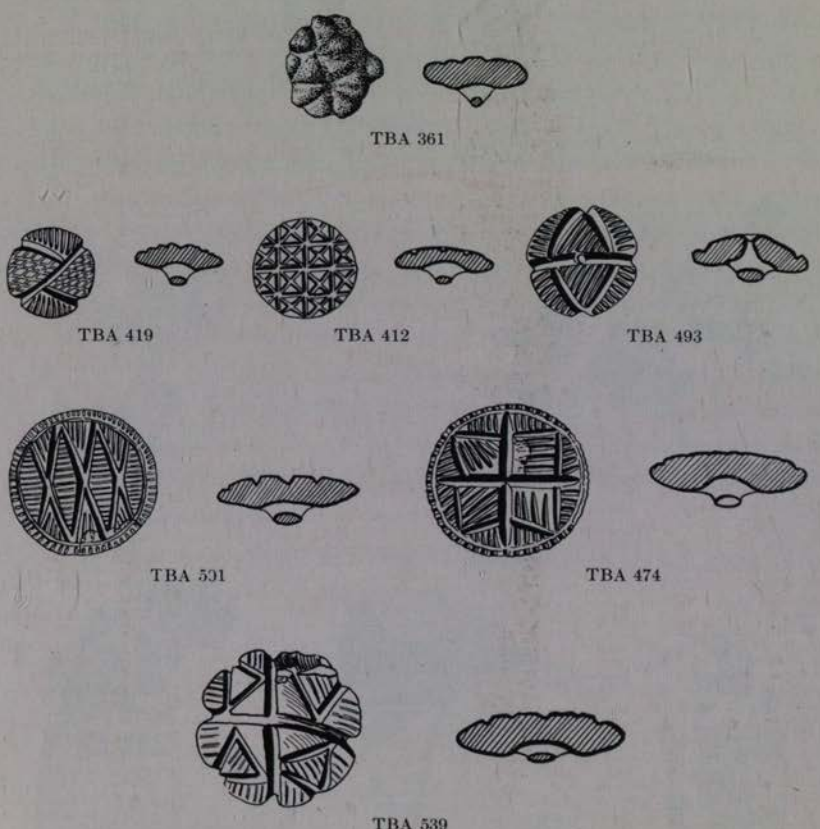
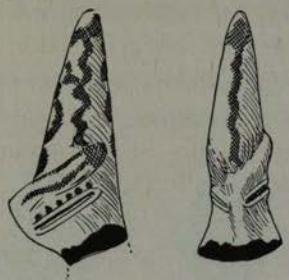
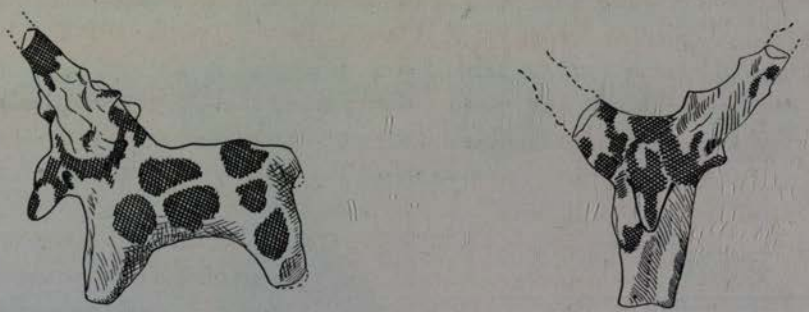


FIG. 93.—A copper seal (at top) and stone seals from the painted-pottery stratum of Tall-i-Bakun A. Scale, 1:2.

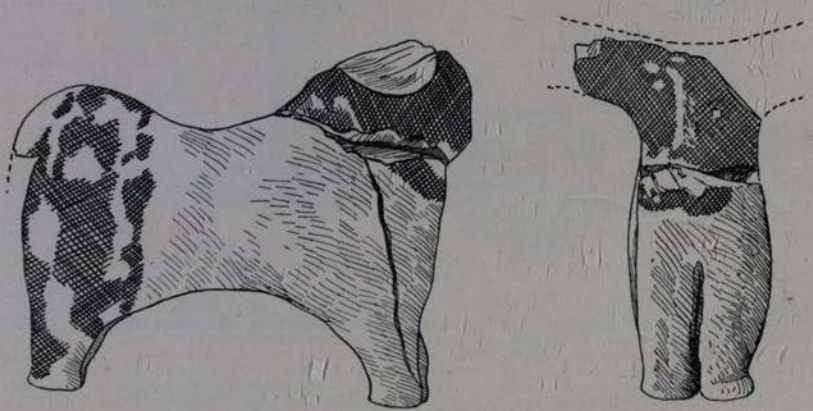
Bakun B. The copper seal TBA 361 is particularly important. Its shape is identical with that of many stone seals, and, as far as the oxide permits recognition, the simple pattern also consists of crossing lines such as are found on stone specimens. A light green stone is preferred for these seals. Four of our samples are made of it, while TBA



TBA 68



TBA 444



TBA 276

FIG. 94.—Figurines of baked clay from Tall-i-Bakun A: human head, stag, and bovine. Scale, 1:2.

419 is black and TBA 412 is brown. There are many variants of the patterns here shown, but all are geometrical. Some impressions on pieces of clay indicate that these objects were actually used as seals, while in regard to the very similar "seals" of Tepe Hissar we had to state that they were presumably used as ornaments.[13]

No figurines occurred in Tall-i-Bakun B. In Figure 94 we illustrate an important little human head of definitely al-ʿUbaid appearance (TBA 68). The conoid headdress and other parts of the face and of the neck are painted in brown shades on a buff ground. The paste also is buff and is of fine texture. The two animal figurines represent a stag, painted purplish brown on a yellowish brown ground, and a long-horned bovine with the same color scheme. There are also figurines of ibexes, rams(?), and sheep, ranging from vaguely modeled, badly baked specimens to more elaborate figurines such as here shown.

The Plain of Marv Dasht, in which Persepolis and these prehistoric mounds are situated, is dotted with many sites of earliest Iran. Given time and a more co-operative spirit on the part of the landowners, all phases of prehistoric life and of the development of this ancient center of Iran from the Stone Age to the time of Pasargadae and Persepolis could be determined.

[13] *Ibid.* pp. 54–56 and Pl. XV. Herzfeld deals with seals of this type in *AMI* V (1933) 49–124.

AERIAL ARCHEOLOGY IN THE PERSEPOLIS AREA

Mary-Helen Warden Schmidt founded in 1935 the Aeronautical Department of the expeditions to Rayy, Persepolis, and Luristan. Her efforts made it grow into the aerial observer, guide, and recorder of the expeditions with unforeseen and incomparable results. Its work continues in her spirit and in her memory.

Almost eight hundred invaluable aerial photographs of archeologically important sites are treasured by the Aeronautical Department (Fig. 95). They document antique remains of Iran from Sasanian Gur (modern Firuzabad) in the south to the so-called "Alexander's Barrier" in the northeast, and from Lake Riza'iyyah (Urmiyah or Urumiyah) in the northwest to Susa in the southwest. But this chapter will not deal with the aerial explorations; it is concerned solely with the air work above the area of operations of the Persepolis Expedition. The results of the explorations will appear separately.

Before continuing, the writer wants to express his appreciation and gratitude to the aerial crew: Lewin B. Barringer, pilot in 1935 and 1936; William G. Benn, pilot in 1937; Frederick Lillich, technical assistant and aircraft mechanic from 1935 to the present time; Boris Dubensky, assistant and photographer of the expeditions to Rayy and Persepolis, who developed and enlarged the aerial photographs in a manner not to be surpassed. An enterprise aided by such loyal and efficient men cannot fail.

On the preceding pages we have shown aerial views of the Persepolis complex, Naqsh-i-Rustam, and the prehistoric mounds Tall-i-Bakun A and B. An analytical sketch will now point out certain features of particular interest in reference to these views, supplemented by the striking air map of Istakhr (Fig. 96).

AIR VIEW OF PERSEPOLIS (FIG. 4)

It would be impossible for any surveyor to produce a drafted topographical map of the area here shown and to indicate all the innumerable details appearing on the air view. These details, often de-

FIG. 95.—The Aeronautical Department of the Persepolis Expedition

cisively important for the archeologist, would totally blur the drafted map, should the surveyor actually spend many years and plenty of funds in charting an area in such a manner. Here we have arrived at the first point of major importance for a scientific expedition, namely economy. Our air mapping of mounds is simple, extremely satisfactory, and equally inexpensive, as far as the map view itself is concerned. As for the plane, as a rule aerial photographs can easily be obtained through the courtesy of civil or military aircraft.

In the case of structures above ground, as at Persepolis, and for mapping excavated buildings, the aerial photograph alone is not sufficient. It has to be supplemented by the architect's plan. But the air map gives an ideal general view of a complex of buildings, such as the Persepolis palaces and their defense system. The air photograph also combines in one record the excavations carried through at various parts of a site. For instance in the Persepolis view Herzfeld's excavations in the southern town territory (right foreground toward center of photograph) and in the northern area (upper left corner) are shown in relation to the Terrace and save the architect the trouble of preparing a general map for this purpose.

The vertical map view of Persepolis records through light and shade the remains of the outer eastern defense wall, which follows the crest of the "Mountain of Mercy." Its course is marked by undulations of the mud-brick deposit, thicker and higher where the towers had been and thinner along the connecting curtain walls. The row of tower hillocks at the base of the mountain, the second line of defense, is equally well marked; so is the wall line at the northern edge of the Terrace. Dotted lines restore the eastern defense system mapped by this air view. The ground panorama, Figure 3, takes the role of an oblique air picture and supplements the vertical photograph.

The contours of the ruined town buildings north and south of the Terrace are not marked. They might have shown in faint white lines if the photograph had been taken in the spring (cf. Fig. 96 and accompanying text). Again, where the filling of the buildings and the earth around them are entirely composed of structural debris, we would not expect difference in coloration due to change in vegetation (cf. p. 134). Stones south of the Terrace and slight swells of the ground on the south, west, and north indicate the presence of buildings. In

Fig. 96.—An aerial "X ray" of the city mound of Istakhr. Structural contours such as the city wall, buildings and rooms, and streets are marked in red

this case, however, surface examination gives the final clue in the form of potsherds and hewn stones.

At Persepolis too some photographs with fixed base points were taken, according to the method described below in reference to Istakhr. Though valuable for plotting excavation projects and for examining the dirt crust in certain units of the grid, at Persepolis the fixed points were less essential than in the case of mounds without known distances between points and without structural landmarks.

AERIAL ANALYSIS OF ISTAKHR (FIG. 96)

Istakhr is one of our most striking examples of the advantage for the archeologist of the aerial map view over a ground survey made by a crew toiling for many weeks and falling short of the ideal. Krefter and Bergner made the excellent drafted map shown in Figure 74. However, its first shortcoming is indicated in the legend. It was started in November, 1933, but was not available to the expedition until June, 1935. True, there were unusual handicaps; but even under normal conditions many months would have passed before it could have been used for its primary purpose, to guide the operations. The air map of such an area can be in the hands of the excavator after two or three days, and in the case of a small site on the second day.

The ground work required for an archeological air map consists solely in fixing certain points on the surface of the site and marking them in such a manner that they appear on the aerial photograph. Since all our excavations are based on a rigid grid system of survey quadrants (100 × 100 meters) subdivided into a hundred excavation plots each 10 × 10 meters, the base points for the air map are logically the corners of the quadrants or of the smaller excavation units. The extensive site of Istakhr required a photograph taken at a considerable height (2,440 meters above the ground). We laid out a cross of quadrant corners as the ground control for the air map. The process of shooting two straight lines at right angles across a site and defining hundred-meter intervals along each is obviously very simple. The hundred-meter points of the two crossing lines are then marked by means of cloth circles with a hole in the center fitted over the survey stake. We used cloth circles 2 meters in diameter, subdivided into two concentric circles of equal breadth, the outer white and the inner black

with white quadrant lines. However, on photographs taken from a great height the inner circle showed only as a tiny dark point. Subsequently we used a circle 3 meters in diameter, which proved to be of more adequate size.

The process of taking the map view is also quite simple. When the cross of base points was ready, oriented of course according to the points of the compass, we took off, circling for altitude and observing from time to time the photographic position of the site through the excellent Zeiss device for vertical photography. It is a suspension apparatus carrying the camera and a telescope above a hole in the bottom of the ship. The telescope is parallel to the axis of the camera and indicates, by means of rectangles incised on the lense, the exact section of the landscape to appear on the film at any given moment. Thus we knew when we were high enough to take the entire site of Istakhr in one photograph. But all important subjects are taken twice, with about 60° overlap, for stereoscopic analysis. The drift of the airplane has to be watched and corrected by means of the movable disk on which the camera rests.

The analysis of our map view of the Istakhr mound is graphically shown on the photograph itself (Fig. 96). A short comparison with the drafted map (Fig. 74) will convince the observer of the considerable advantage of the archeological air map if taken under favorable conditions, that is, in our case, in the spring.

The effect of the vertical photograph is that of an "X ray," for the following reason. In spring the verdure covering the site is denser in the areas with deep, loose humus, that is, the ancient rooms filled with refuse, former garden patches, and the like. Above remains of ancient walls or hard-tramped streets reaching close to the present mound surface, the verdure thrives less; hence on the aerial photograph many walls and roads appear as white lines, specks, and patches in the otherwise dark, that is, greener, areas. Again, entire rooms and buildings may be filled with debris of the same composition as the walls. The photograph then shows an irregular light-colored patch, hard to define. Furthermore, modern tracks and similar disturbances have to be eliminated when analyzing the air view. In the case of Istakhr a second aerial photograph, taken in the fall, showed modern tracks as white lines and eliminated them in the analysis of the view

under consideration. The photograph of the site after the disappearance of the spring verdure showed a much more pronounced relief which brought out certain parts of the city defense and three main streets; but it refused to record the innumerable details which make the view of the grass-covered site so fascinating.

In our illustration those remains of the ancient city which were certain or fairly clear are marked in red, applied directly on the photograph. The map view reveals a good part of the latest city, which ceased to exist in the 10th century of our era. Its main thoroughfares look rather straight and modern; but there are also the crooked lanes of oriental towns. Rows of houses once more line the streets, and the latter lead again to the gates of the city. The aerial map defines the sites of at least three gates; for at the points of junction of the thoroughfares with the town inclosure openings must have existed. We proved this obvious theory by defining the northwest gate through excavation.

Most of the structures marked on the air view doubtless belong to the Islamic city; but the streets presumably follow the courses of earlier veins of traffic. The city inclosure was built in Sasanian times, and houses of this period are close to the surface in the westernmost area, as shown by the Sasanian buildings in the excavation which sounded the western tip of Istakhr.

There are still innumerable markings on the aerial map which are too faint or too shapeless to be identifiable in the present state of our experience. We mention at this point that when first seeing the aerial photograph here shown we considered it a very dirty and inadequate picture. We had to learn to observe and to analyze before we could appreciate its extraordinary value.

In utilizing the air map for the excavation the base points are connected by lines, forming a cross, as shown on the photograph. Then parallel lines are drawn through the hundred-meter marks, resulting in a survey grid of quadrants covering the entire site and to be designated according to the letter system shown on the drafted map. Those quadrants which contain areas indicated as promising by the analysis and therefore selected for excavation are subdivided by means of a proportional divider into 10×10-meter plots. The latter are the excavation units, numbered according to a co-ordinate system. On

the ground these excavation plots are also being defined and staked, and the heights of their corners, as well as of all other marked points, are being determined in relation to a common zero point. The plot corners subsequently serve as fixed points for surveying excavated architecture and finds.

In many cases an oblique photograph supplementing the vertical view suffices to visualize the relief of a site. If desired, our Zeiss mirror stereoscope can determine the height of any point of a site in relation to all others with a sufficient degree of accuracy.

AIR MAP OF NAQSH-I-RUSTAM (FIG. 70)

The air view shows Herzfeld's trench, which defines the contours of the wall with its semicircular towers inclosing the sacred precinct in front of the royal tombs (Fig. 69). The fortification reminds one of the Sasanian inclosure of Istakhr. The Sasanian reliefs at Naqsh-i-Rustam show sufficiently that this spot played a prominent role during this period; but it is quite possible that an earlier, Achaemenian wall is buried below the later structure. The air photograph also shows elevations paralleling to a certain extent the inclosure on the east and on the south. The character of these formations is not yet known.

The black-centered white circles mark, as described above, base points laid out on the ground. For the limited ruin area of Naqsh-i-Rustam one quadrant 100 meters square was sufficient; but here we have also indicated a few of the excavation plots, since the first point of attack, a gentle elevation in front of Darius' tomb, had been selected for excavation prior to taking the final map view.

If this deposit had been covered with verdure we might have been able to see some contours of buildings, to judge by our experience at Istakhr. As it is, the air map shows solely a compact mound formation, its limits defined by the above mentioned inclosure, and the hillocks at east and south. During the subsequent excavation the building in front of Darius' tomb proved to belong to the earliest phase of the Islamic epoch. The air picture also shows debris on the cliff above the royal tombs and groups of parallel gashes in the rock slope to the west and northwest. Such series of gashes in the rocks near Persepolis mark the quarries where the Achaemenian stonecutters obtained the slabs for the palatial buildings on the Terrace. Stone-built structures

may therefore exist at Naqsh-i-Rustam in addition to the Kaʿbah-i-Zardusht referred to on pages 103 f.

The main advantage of the air map of Naqsh-i-Rustam is the obvious fact that it saved the preparation of a drafted survey. It marks the limits of the ruin deposit in its physical environment, and it subdivides the area to be tested into our excavation units. The process of preparing and using the air view as a map has been explained above under Istakhr.

AERIAL PREPARATION FOR TESTS AT TALL-I-BAKUN (FIG. 88)

The air map of Tall-i-Bakun A and B was again prepared according to the method applied at Istakhr. In the present case, however, five complete quadrants, each 100 meters square, were laid out over parts of the area occupied by the two mounds under consideration. As usual, parallel lines drawn on the enlargement of the photograph completed the grid, and the excavation plots were entered at the spots selected for soundings. It is understood without saying that aerial observations are always supplemented by ground examinations before work starts.

The aerial photograph shows the excavation and the trenches made by Herzfeld and Langsdorff in Tall-i-Bakun A (formerly called PPA). Our test aimed at sounding the rest of this hill and the neighboring twin mound (Tall-i-Bakun B). The surfaces of the mounds, ground smooth by the elements in the course of millennia, do not show any contours of structures. Again we are sure that strange markings would be visible after rains. Many burials of the Islamic period fill the top stratum of each mound, as our subsequent excavations showed. We would expect the grave pits to be plainly marked after a rain, since they would retain the moisture longer than would the surrounding ground. The contours of a rectangular ruin with round towers at the corners are visible at the western edge of Tall-i-Bakun A. The form clearly identifies this inclosure as an Islamic *qalʿah* or village fort.

Again, as in the case of Naqsh-i-Rustam, the excavations were entirely based on the air map, eliminating the drafted survey. The air view has also the practical advantage of showing the character of the inclosing terrain. The limits of cultivation are well defined, and the

dumping of the excavated dirt can be organized in such a manner that claims for damage are avoided.

We did not succeed in tracing the burial site of the ancient settlers of Tall-i-Bakun. From the air we combed the environs of the mounds; but, though we found quite a few discolored patches of ground that had the appearance of cemeteries, the subsequent examination of the surface gave no further clues or showed that such spots were domiciliary deposits. Our failure may be due to the fact that continuous cultivation disturbs and often abolishes the surface traces which could give clues to the presence of antique remains.

ARCHEOLOGICAL MAP OF THE PERSEPOLIS PLAIN (FIG. 97)

We have seen the incomparable value of the airplane as surveyor of a particular site. Its efficiency as explorer of vast and difficult territories will be described elsewhere. A further use is for mapping extensive areas. Our ship, for instance, mapped, by the procedure detailed below, the remains of antiquity scattered over hundreds of square miles in the Persepolis plain, now called Marv Dasht, and in the neighboring valleys.

By means of a pantograph Benn, the pilot, first enlarged to twice its size (i.e., to 1:126,720) the Survey of India 1:253,440 map dealing with the section of territory to be combed. On later occasions we used the photographic process, saving time and labor. The drafted map of Marv Dasht and environs was then subdivided by east-west guide lines into strips covering 4 kilometers each in width—therefore our term "strip-mapping" for this sort of survey. North-south lines would have fulfilled the same purpose.

We started on the guide line touching Persepolis. The pilot, carefully considering the drift, flew westward along this line, at an altitude of 1,000 feet, roughly 300 meters, above the ground. The writer entered and numbered on the map the sites he noticed within the strip on his side of the plane and dictated certain details to the recorder, a member of the Expedition staff. At the end of the strip the pilot turned and, flying from west to east along the next guide line, covered the same strip once more. In this manner every strip was verified a second time, under different light—a necessary precaution, since some

FIG. 97.—Archeological map of the Persepolis plain, based on Survey of India maps with the permission of the Surveyor-General and on aerial survey made by the Mary-Helen Warden Schmidt Foundation, July, 1937. Scale, 1 inch = 6 miles.

sites, not more than stains on the surface, were only visible in certain light.

In thirteen hours of flying we located about four hundred sites within the area shown on the map. A ground crew would have labored several years to obtain these results, and many sites would never have been visible to eyes close to the earth. However, the location of these ruins is not our final aim. Although the survey distinguishes complex mounds from historic town ruins and the latter from Islamic village forts, and though we were able to distinguish citadel formations from domiciliary sites, for accurately defining the periods of occupation ground examinations of all ruins have to follow. Collections of potsherds and other data will finally result in establishing the settlement history of the Persepolis area from the earliest times to our day.

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